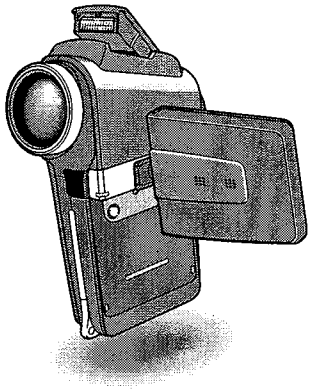
FILE NO.

SANYO

SERVICE MANUAL

Digital Movie Camera



VPC-HD1

(Product Code : 168 027 01)
(U.S.A.)
(Canada)
(Korea)
(Taiwan)

VPC-HD1EX

(Product Code : 168 027 02)
(Europe)
(South America)
(China)
(Australia)
(Hong Kong)
(Russia)
(Middle East)
(Africa)
(General)

VPC-HD1E

(Product Code : 168 027 03)
(U.K.)

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CIRCUIT DIAGRAMS & PRINTED WIRING BOARDS C1

WARNING

This product has been manufactured using lead-free solder. Be sure to follow the warning given on page 2 when carrrying out repair work.

PRODUCT SAFETY NOTICE

The components designated by a symbol (⚠) in this schematic diagram designates components whose value are of special significance to product safety. Should any component designated by a symbol need to be replaced, use only the part designated in the Parts List. Do not deviate from the resistance, wattage, and voltage ratings shown.

CAUTION : Danger of explosion if battery is incorrectly replaced.

Replace only with the same or equivalent type recommended by the manufacturer.
Discard used batteries according to the manufacturer's instructions.

NOTE : 1. Parts order must contain model number, part number, and description.
2. Substitute parts may be supplied as the service parts.
3. N. S. P. : Not available as service parts.

Design and specification are subject to change without notice.

REFERENCE No. SM5310652

WARNING

Do not use solder containing lead.

This product has been manufactured using lead-free solder in order to help preserve the environment.
Because of this, be sure to use lead-free solder when carrying out repair work, and never use solder containing lead.

Lead-free solder has a melting point that is 30 - 40°C (86 - 104°F) higher than solder containing lead, and moreover it does not contain lead which attaches easily to other metals. As a result, it does not melt as easily as solder containing lead, and soldering will be more difficult even if the temperature of the soldering iron is increased.
The extra difficulty in soldering means that soldering time will increase and damage to the components or the circuit board may easily occur.
Because of this, you should use a soldering iron and solder that satisfy the following conditions when carrying out repair work.

Soldering iron

Use a soldering iron which is 70 W or equivalent, and which lets you adjust the tip temperature up to 450°C (842°F). It should also have as good temperature recovery characteristics as possible.
Set the temperature to 350°C (662°F) or less for chip components, to 380°C (716°F) for lead wires and similar, and to 420°C (788°F) when installing and removing shield plates.
The tip of the soldering iron should have a C-cut shape or a driver shape so that it can contact the circuit board as flat or in a line as much as possible.

Solder

Use solder with the metal content and composition ratio by weight given in the table below. Do not use solders which do not meet these conditions.

Metal content	Tin (Sn)	Silver (Ag)	Copper (Cu)
Composition ratio by weight	96.5 %	3.0 %	0.5 %

Lead-free solder is available for purchase as a service tool.
Use the following part number when ordering:
Part name: Lead-free solder with resin (0.5 mm dia., 500 g)
Part number: VJ8-0270

Note:

If replacing existing solder containing lead with lead-free solder in the soldered parts of products that have been manufactured up until now, remove all of the existing solder at those parts before applying the lead-free solder.

1. OUTLINE OF CIRCUIT DESCRIPTION

1-1. CCD CIRCUIT DESCRIPTION

1. IC Configuration

The CCD peripheral circuit block basically consists of the following ICs.

IC901 (MN39727PMJ-A)	CCD imager
IC932 (AN20111A)	V driver
IC931 (AD9942BBCZ)	CDS, AGC, A/D converter, H driver, vertical TG

2. IC901 (CCD)

[Structure]

1/2.5 inch positive pixel-type color frame-reading fixed picture elements

2 channel output

Optical size	1/2.5 type format
Effective pixels	2612 (H) X 1954 (V)
Pixels in total	2728 (H) X 1966 (V)
Optical black	
Horizontal (H) direction:	Front 58 pixels, Rear 0 pixels
Vertical (V) direction:	Front 6 pixels, Rear 6 pixels
Dummy bit number	Horizontal : 28 Vertical :5

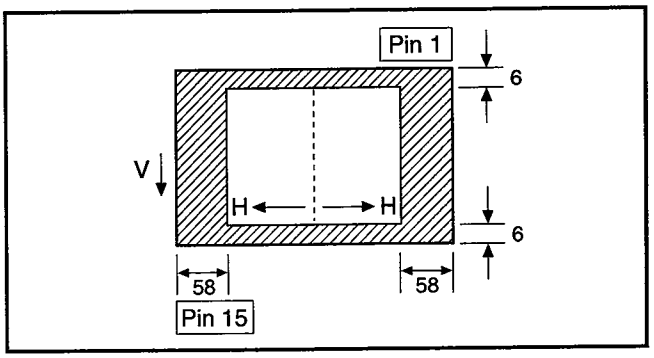


Fig. 1-1.Optical Black Location (Top View)

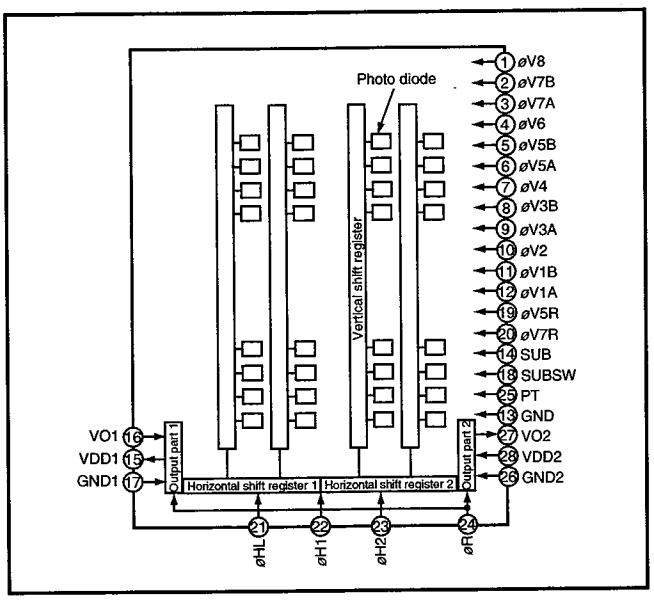


Fig. 1-2. CCD Block Diagram

Pin No.	Symbol	Pin Description	Waveform	Voltage
1, 2, 7, 8, 10, 11, 20	V_{1B}, V_2, V_{3B}, V_4, V_{7B}, V_{7R}, V_8	Vertical register transfer clock		-6.0 V, 0 V
3, 9, 12	V_{1A}, V_{3A}, V_{7A}	Vertical register transfer clock		-6.0 V, 0 V, 12 V
4, 5, 19	V_{5B}, V_{5R}, V_6	Vertical register transfer clock		-6.0 V, 0 V
6	V_{5A}	Vertical register transfer clock		-6.0 V, 0 V, 12 V
13, 17, 26	GND, GND1, GND2	GND	GND	0 V
14	SUB	Substrate clock	DC	Aprox. 6 V (Different from every CCD)
15, 28	VDD1, VDD2	Circuit power	DC	12 V
16, 27	VOL1, VOL2	Signal output	DC	Aprox. 12 V
18	SUB SW	Substrate control		0, 3.4 V (When importing all picture element: 3.4 V)
21	HL	Horizontal register transfer clock		0 V, 3.4 V
22	H_1	Horizontal register transfer clock		0 V, 3.4 V
23	H_2	Horizontal register transfer clock		0 V, 3.4 V
24	R	Reset gate clock		4.2 V, 9.0 V
25	PT	Protection transister bias	DC	-6 V

Table 1-1. CCD Pin Description

---- When sensor read-out

3. IC932 (V Driver)

A V driver (IC932) is necessary in order to generate the clocks (vertical transfer clock and electronic shutter clock) which driver the CCD.

In addition the XV1-XV8 signals which are output from IC102 are vertical transfer clocks, and the XSG signal is superimposed onto XV1, XV3, XV5 and XV7 at IC932 in order to generate a ternary pulse. In addition, the XSUB signal which is output from IC102 is used as the sweep pulse for the electronic shutter.

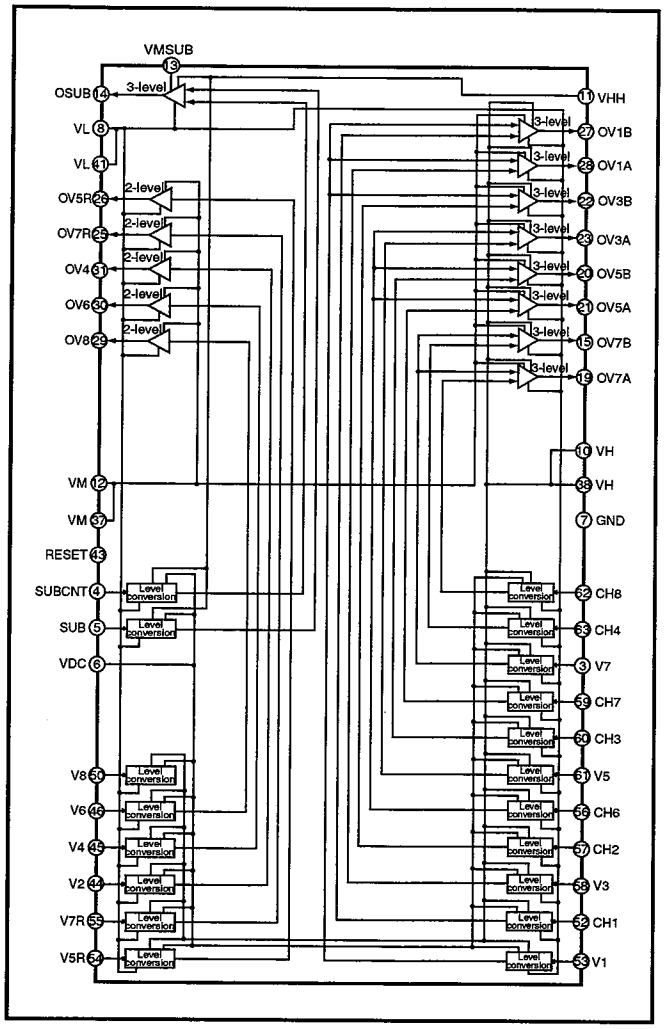


Fig. 1-3. IC932 Block Diagram

4. IC931 (H Driver, CDS, AGC and A/D converter)

IC931 contains the functions of H driver, CDS, AGC and A/D converter. As horizontal clock driver for CCD image sensor, HØ1, HØ2, HØL and RG are generated inside, and output to CCD.

The video signal which is output from the CCD is input to pin (1) and pin (74) of IC931. There are sampling hold blocks generated from the SHP and SHD pulses, and it is here that CDS (correlated double sampling) is carried out.

After passing through the CDS circuit, the signal passes through the AGC amplifier (VGA: Variable Gain Amplifier). It is A/D converted internally into a 14-bit signal, and is then input to MOVIC (IC102). The gain of the VGA amplifier is controlled by pins (4), (5), (6), (69), (70) and (71) serial signal which is output from ASIC (IC101).

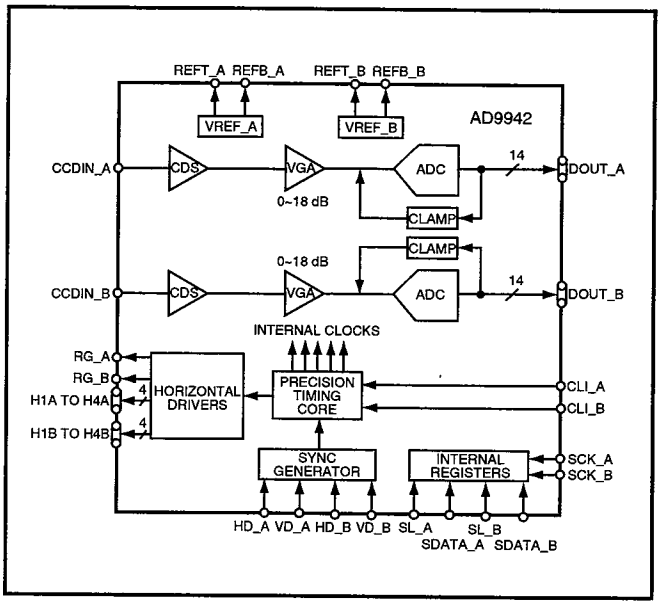


Fig. 1-4. IC931 Block Diagram

1-2. CP1 and VF1 CIRCUIT DESCRIPTION

1. Circuit Description

1-1. Digital clamp

The optical black section of the CCD extracts averaged values from the subsequent data to make the black level of the CCD output data uniform for each line. The optical black section of the CCD averaged value for each line is taken as the sum of the value for the previous line multiplied by the coefficient k and the value for the current line multiplied by the coefficient 1-k.

1-2. Signal processor

1. γ correction circuit

This circuit performs (gamma) correction in order to maintain a linear relationship between the light input to the camera and the light output from the picture screen.

2. Color generation circuit

This circuit converts the CCD data into RGB signals.

3. Matrix circuit

This circuit generates the Y signals, R-Y signals and B-Y signals from the RGB signals.

4. Horizontal and vertical aperture circuit

This circuit is used gemerate the aperture signal.

1-3. AE/AWB and AF computing circuit

The AE/AWB carries out computation based on a 64-segment screen, and the AF carries out computations based on a 6-segment screen.

1-4. SDRAM controller

This circuit outputs address, RAS, CAS and AS data for controlling the SDRAM. It also refreshes the SDRAM.

1-5. Communication control

1. SIO

This is the interface for the 8-bit microprocessor.

2. PIO/PWM/SIO for LCD

8-bit parallel input and output makes it possible to switch between individual input/output and PWM input/output.

1-6. TG/SG

Timing generated for 5 million pixel horizontal addtion CCD control.

1-7. Digital encorder

It generates chroma signal from color difference signal.

2. Outline of Operation

When the shutter opens, the reset signals (ASIC and CPU) and the serial signals ("take a picture" commands) from the 8-bit microprocessor are input and operation starts. When the TG/SG drives the CCD, picture data passes through the A/D and CDS, and is then input to the MOVIC as 13-bit 2 channels data. The data that is input to the MOVIC is converted to 1 ch from 2 ch, and input to the SDRAM through digital clamp.

The data that is input to SDRAM is input to the ASIC through the D1 I/F. The AF, AE, AWB, shutter, and AGC value are computed from this data, and three exposures are made to obtain the optimum picture. The data which has already been stored in the SDRAM is read by the CPU and color generation is carried out. Each pixel is interpolated from the surrounding data as being either R, G, and B primary color data to produce R, G and B data. At this time, correction of the lens distortion which is a characteristic of wide-angle lenses is carried out. After AWB and γ processing are carried out, a matrix is generated and aperture correction is carried out for the Y signal, and the data is then compressed by JPEG and is then written to card memory (SD card).

When the data is to be output to an external device, it is taken data from the memory and output via the USB I/F. When played back on the LCD and monitor, data is transferred from memery to the SDRAM, and the image is then elongated so that it is displayed over the SDRAM display area.

3. Organic EL Block

During EE, gamma conversion is carried out for the 12-bit RGB data which is input from the A/D conversion block of the CCD to the ASIC via the MOVIC in order that the γ revised can be displayed on the video. The YUV of 640 x 480 is then transferred to the SDRAM.

The data which has accumulated in the SDRAM is converted to digital YUV signal in conformity to ITUR-601 inside the ASIC by SDRAM control circuit inside the ASIC, the data is sent to the organic EL driver IC and displayed the image to organic EL panel.

If the shutter button is pressed in this condition, the 12-bit data which is output from the A/D conversion block of the CCD is sent to the SDRAM (DMA transfer), and is displayed on the organic EL as a freeze-frame image.

During playback, the JPEG image data which has accumulated in the SD card is converted to YUV signals. In the same way as for EE, the data is then sent to the SDRAM, converted to digital YUV signal in conformity to ITUR-601 inside the ASIC, the data is sent to the organic EL driver IC and displayed the image to organic EL panel.

The organic EL driver is converted digital YUV signals to RGBW signals from ASIC, and these RGB signals and the control signal which is output by the organic EL driver are used to drive the organic EL panel.

The organic EL driver converts the digital Y/U/V signals from the ASIC to R/G/B/W signals, and these R/G/B/W signals and the control signals that are output by the organic EL driver are used to drive the organic EL panel. The TFTs (Thin Film Transistors) in each picture element of the organic EL panel read the R/G/B/W signals in order 1 V at a time to create 862 x 240 images. If there is a large difference in phase between the PVDD (voltage power supply for the organic EL panel) and the R/G/B/W video signals, the current that flows to the organic EL picture elements becomes greater and the display becomes brighter. If the phase difference is small, the display becomes darker. In addition, the brightness and contrast settings for the LCD can be varied by means of the serial data from the ASIC.

4. Lens Drive Block

4-1. Focus drive

The focus motor is a stepping motor which is microstep-driven by IC951. The control signals (3-wire serial control (SDATA, SCLK, SENAB), VD) and 4 MHz clock signal (OSCIN) from clock generator of that are output from the ASIC (IC101) port is input to IC951 so that IC951 can microstep control the focus motor. Detection of the standard focusing motor position is carried out by means of photointerruptor sensor inside the lens.

4-2. Zoom drive

The zoom motor is a stepping motor which is microstep-driven by IC951. The control signals (3-wire serial control (SDATA, SCLK, SENAB), VD) and 4 MHz clock signal (OSCIN) from clock generator of that are output from the ASIC (IC101) port is input to IC951 so that IC951 can microstep control the zoom motor. Detection of the standard zoom motor position is carried out by means of photointerruptor sensor inside the lens.

4-3. ND filter

ND filter control is carried out by the control signals (ND ON and ND OFF) that are output from the ASIC (IC101) port and input to IC951 so that IC951 can drive the ND filter.
The control signals 3-wire serial control (SDATA, SCLK, SENAB) and 4 MHz clock signal (OSCIN) from clock generator allow IC951 to operate.

4-4. Iris drive

The drive method is a galvanometer type without braking coil. The aperture opening amout is controlled as follows: the output from the Hall sensor inside the lens is amplified by the Hall amplifier circuit inside the IC971 lens drive IC, and the difference between the current and target aperture determined by the resulting output and the exposure amout output from the ASIC (IC101) is input to the servo amplifier circuit (IC971) to keep the aperture automatically controlled to the target aperture. The lens aperture control signal is output from IC971 and is input to lens drive IN6B of IC951. IC951 functions as the driver for driving the lens.
The control signals 3-wire serial control (SDATA, SCLK, SENAB) and 4 MHz clock signal (OSCIN) from clock generator allow IC951 to operate.

4-5. Shutter drive

Reverse voltage is applied to the above aperture coil to operate the shutter. With normal operation, the OC_EN and OC_CONT signals that are output from the ASIC (IC101) are maintained at a low level and when the shutter operates, the OC_EN and OC_CONT signals switch to high, and after that the SHUTTER + signal that is output from the ASIC (IC101) becomes high and the shutter operates.
It is input to lens drive IN6B of IC951 with low level. IC951 functions as the driver for driving the lens.
The control signals 3-wire serial control (SDATA, SCLK, SENAB) and 4 MHz clock signal (OSCIN) from clock generator allow IC951 to operate.

5. Video Clip Recording and Playback

5-1. Recording

The signal from the camera block is input to IC102 (MOVIC). The data that is input to the MOVIC is input to SDRAM, and input to IC101 (ASIC) through D1 (I/F).
The MOVIC converts this data to encoded MPEG4 data, after which it is returned to the ASIC as streaming data, and the data is then written in sequence onto the SD card. At this time, the audio signals that are input to the built-in microphone are converted into digital data by the audio CODEC IC of IC183, and they are then input to IC102 (MOVIC). The audio data is then encoded (AAC) by IC102, and then it is returned to the ASIC as streaming data and is then written in sequence onto the SD card together with the image signals described above.

5-2. Playback

The data is read from the SD card and input to IC102 as streaming data. The encoded data is decoded into image data by IC102 and then returned to the ASIC where it is displayed by the LCD or on a TV monitor. D4 image is output from IC102. At this time, the audio data is also decoded by IC102, and is input to IC183 as digital data. D/A conversion is carried out at IC183, and the sound is then output to the speaker or to the LINE OUT terminal.

6. Audio CODEC Circuit (IC183)

The audio signals from the microphone are converted into 16-bit digital data. AD conversion is carried out at a maximum sampling frequency of 48 kHz.
During audio playback, the 16-bit digital data is converted into analog signals and these drive the speaker or line out system. DA conversion is carried out at a maximum sampling frequency of 48 kHz.

1-3. PW1 POWER CIRCUIT DESCRIPTION

1. Outline

This is the main power circuit, and is comprised of the following blocks.
Switching controller (IC501)
Analog 12 V power output (L5009)
Analog -6 V power output (L5008)
Analog 3.4 V power output (L5013)
5 V power output (L5005)
Digital 3.25 V power output (L5006)
Digital 1.2 V power output (L5007)
PVDD power output (L5011)
CV power output (L5014, Q5003)

2. Switching Controller (IC501)

This is the basic circuit which is necessary for controlling the power supply for a PWM-type switching regulator, and is provided with eight built-in channels, only SU (5 V), M (digital 3.25 V), SD (digital 1.2 V), BST (analog 12 V), INV (analog -6 V), AFE (analog 3.4 V), LED (PVDD) and AUX (CV) are used. Each power supply output is received, and the PWM duty is varied so that each one is maintained at the correct voltage setting level.

2-1. Short-circuit protection circuit

If output is short-circuited for the length of time determined by internal fixing of IC501 , all output is turned off. The control signal (P ON) are recontrolled to restore output.

3. Analog 12 V Power Output

HVVDD is output through +12 V (A) and IC503 regulator. Feedback for the +12 V (A) is provided to the switching controller (Pin (26) of IC501) so that PWM control can be carried out.

4. Analog -6 V Power Output

-6 V (A) is output. Feedback for the -6 V (A) is provided to the swiching controller (Pin (25) of IC501) so that PWM control can be carried out.

5. Analog 3.4 V Power Output

+3.4 V (A) is output. Feedback for the +3.4 V (A) is provided to the switching controller (Pin (11) of IC501) so that PWM control to be carried out.

6. 5 V Power Output

+5 V is output. Feedback for the +5 V is provided to the switching controller (Pin (42) of IC501) so that PWM control to be carried out.

7. Digital 3.25 V Power Output

+3.25 V (D) is output. Feedback for the +3.25 V (D) is provided to the switching controller (Pin (2) of IC501) so that PWM control to be carried out.

8. Digital 1.2 V Power Output

+1.2 V (D) is output. Feedback for the +1.2 V (D) is provided to the switching controller (Pin (12) of IC501) so that PWM control to be carried out.

9. PVDD Power Output

PVDD (8 V) is output. Feedback for the PVDD is provided to the switching controller (Pin (38) of IC501) so that PWM control to be carried out.

10. CV Power Output

CV (-3.5 V) is output. Feedback for the CV is provided to the switching controller (Pin (23) of IC501) so that PWM control to be carried out.

11. Camera charging circuit

If the camera's power is turned off, play mode and USB connection mode (card reader and pictbridge) setting while it is connected to the AC adaptor, the battery will be recharged. In the above condition, a CTL signal is sent from the microprocessor and recharging starts.

1-4. PW1 STROBE CIRCUIT DESCRIPTION

1. Charging Circuit

When UNREG power is supplied to the charge circuit and the CHG signal from microprocessor becomes High (3.3 V), the charging circuit starts operating and the main electorolytic capacitor is charged with high-voltage direct current.
However, when the CHG signal is Low (0 V), the charging circuit does not operate.

1-1. Charge switch

When the CHG signal switches to Hi, IC541 starts charging operation.

1-2. Power supply filter

C5401 constitutes the power supply filter. They smooth out ripples in the current which accompany the switching of the oscillation transformer.

1-3. Oscillation circuit

This circuit generates an AC voltage (pulse) in order to increase the UNREG power supply voltage when drops in current occur. This circuit generates a drive pulse with a frequency of approximately 150-250 kHz, and drive the oscillation transformer.

1-4. Oscillation transformer

The low-voltage alternating current which is generated by the oscillation control circuit is converted to a high-voltage alternating current by the oscillation transformer.

1-5. Rectifier circuit

The high-voltage alternating current which is generated at the secondary side of T5401 is rectified to produce a high-voltage direct current and is accumulated at electrolytic capacitor C5412.

1-6. Charge monitoring circuit

The functions programmed in the IC541 monitor oscillations and estimate the charging voltage. If the voltage exceeds the rated value, charging automatically stops. Then, the CHG-DONE signal is changed to Lo output and a "charging stopped" signal is sent to the microcomputer.

2. Light Emission Circuit

When FLCLT signal is input from the ASIC expansion port, the stroboscope emits light.

2-1. Emission control circuit

When the FLCLT signal is input to the emission control circuit, Q5409 switches on and preparation is made to the light emitting. Moreover, when a FLCLT signal becomes Lo, the stroboscope stops emitting light.

2-2. Trigger circuit

The Q5409 is turned ON by the FLCLT signal and light emission preparation is preformed. Simultaneously, high voltage pulses of several kV are emitted from the trigger coil and applied to the light emitter.

2-3. Light emitting element

When the high-voltage pulse form the trigger circuit is applied to the light emitting part, currnet flows to the light emitting element and light is emitted.

Beware of electric shocks.

1-5. SYA CIRCUIT DESCRIPTION

1. Configuration and Functions

For the overall configuration of the SYA block, refer to the block diagram. The SYA block centers around a 8-bit microprocessor (IC301), and controls camera system condition (mode).
The 8-bit microprocessor handles the following functions.
1. Operation key input, 2. Clock control and backup, 3. Power ON/OFF, 4. Storobe charge control.

Pin	Signal	I/O	Outline
1	SCLK	O	Serial data clock
2	ZCARD	I	SD card detection (L= card)
3	BACKUP CTL	O	Backup battery charge control
4	CHG_CNT	O	Camera battery charge prohibition/permission
5	HOT LINE	I	Hot line from ASIC
6	VF. LED (R)	O	VF. LED (red) (H= lighting)
7	PLLRST	O	-
8	NOT USED	-	-
9	VDD2	-	Backup 3.2 V
10	VSS2	-	GND
11	CHG ON	O	Strobo condensor charge control signal (H= charge)
12	LCD ON1	O	OLED start-up signal output (H= start up)
13	CLKSEL0	O	ASIC clock selection (fixing)
14	NOT USED	-	-
15	CVON	O	OLED power control
16	P ON	O	D/D converter ON/OFF control (H= ON)
17	NOT USED	-	-
18	MRST	O	System reset output
19	VF. LED (G)	O	VF. LED (green) (H= lighting)
20	ZUSB_DET	I	USB detection input
21	CAM_LED	O	Cradle camera detection display LED drive
22	BAT_LED	O	Cradle charge display LED drive
23	PLLEN	O	PLL ON/OFF control (H= ON)
24	USB_TRIG	I	Cradle USB trigger detection
25	TH_ON	O	Temperature sensor power ON/OFF
26	BATCHGERR	I	Camera battery charge error detection (L= detection)
27	ZBOOT_COMREQ	I	BOOT/command request input from ASIC
28	BATCHGCNT	O	Camera charge control
29	AVREF ON	O	SW 3.2 V ON/OFF control (L= ON)
30~33	SCAN IN5~2	I	Keyscan input 5~2
34	NOT USED	-	-
35, 36	SCAN IN1, 0	I	Keyscan input 1, 0
37	VSS3	-	GND
38	VDD3	-	Backup 3.2 V
39	FLW_SI	I	Serial data input for flash
40	FLW_SCK	I	Serial data clock for flash
41	FLW_SO	O	Serial data output for flash
42	DC_IN	I	DC power connection detection input (L= detection)
43~46	SCAN OUT3~0	O	Keyscan output 3~0
47	NOT USED	-	-
48	BAT_CHGI	I	IC521 charge electric current monitoring
49	ZAV_JACK	I	AV jack detection (L= HD/ M=SD/ H=USB cable or no cable)

See next page →

50	BAT_TEMP	I	Lithium battery temperature detection
51	NOT USED	-	-
52	BAT_OFF	I	Battery OFF detection signal input (L= OFF detection)
53	ZSREQ	I/O	Transmission clock for communication (SYA ↔ ASIC)
54	SCAN IN6	I	Keyscan input 6
55	IR_IN	I	Infrared remote control transmission data input
56	RESET	I	Reset input
57	XCIN	I	Clock (32.768 kHz)
58	XCOUT	O	Clock
59	VSS1	-	GND
60	XIN	I	Main clock (4MHz)
61	XOUT	O	Main clock
62	VDD1	-	Backup 3.2 V
63	BATTERY	I	UNREG_SY voltage mesurement input
64	CHG_DONE	I	Strobo condensor charging completion signal input (H= completion)
65	INT_TEMP	I	Substrate temperature measurement input around ASIC
66	ASIC_SDO	I	Serial data input to ASIC
67	ASIC_SDI	O	Serial data output to ASIC
68	NOT USED	-	-

Table 5-1. 8-bit Microprocessor Port Specification

2. Internal Communication Bus

The SYA block carries out overall control of camera operation by detecting the input from the keyboard and the condition of the camera circuits. The 8-bit microprocessor reads the signals from each sensor element as input data and outputs this data to the camera circuits (ASIC) or to the LCD display device as operation mode setting data. Fig. 5-1 shows the internal communication between the 8-bit microprocessor, ASIC and SPARC lite circuits.

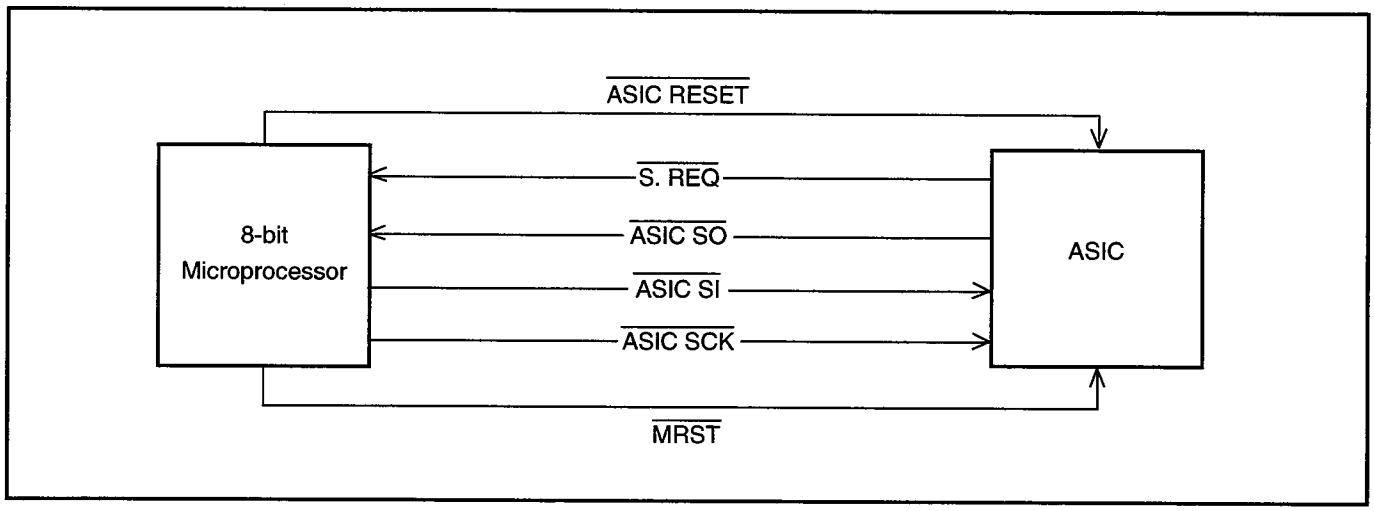


Fig. 5-1 Internal Bus Communication System

3. Key Operaiton

For details of the key operation, refer to the instruction manual.

SCAN OUT \ SCAN IN	0	1	2	3	4	5	6
0	← LEFT	→ RIGHT	↑ UP	↓ DOWN	SET	CAMERA	PLAY
1	TELE	WIDE	REC	SHUTTER 1st	SHUTTER 2nd	MENU	SPEED UP
2	HD/SD	POP UP	OLED LOTATION	-	-	-	POWER ON
3	SEQUENTIAL SHOT	TEST	STROBO	-	-	-	PANEL OPEN

Table 5-2. Key Operation

4. Power Supply Control

The 8-bit microprocessor controls the power supply for the overall system.

The following is a description of how the power supply is turned on and off. When the battery is attached, a regulated 3.2 V voltage is normally input to the 8-bit microprocessor (IC301) by IC302, so that clock counting and key scanning is carried out even when the power switch is turned off, so that the camera can start up again. When the battery is removed, the 8-bit microprocessor operates in sleep mode using the backup lithum battery. At this time, the 8-bit microprocessor only carries out clock counting, and waits in standby for the battery to be attached again. When a switch is operated, the 8-bit microprocessor supplies power to the system as required.

Both the PA ON signal from the ASIC and the P ON signal from the 8-bit microprocessor at pin (16) set to high, and then turns on the DC/DC converter. After this, low signal is output from pin (18) so that the ASIC is set to the reset condition. After, this pin set to high, and set to active condition. If the OLED monitor is on, the LCD ON 1 signal at pin (12) set to high, and the DC/DC converter for the OLED monitor is turned on. Once it is completed, the ASIC returns to the reset condition, all DC/DC converters are turned off and the power supply to the whole system is halted.

		ASIC, memory	CCD	8 bit CPU	OLED MONITOR
Power voltage		3.3 V 1.2 V	5 V (A) +12 V etc.	3.2 V (ALWAYS)	3.3 V +8.5 V etc.
Power OFF		OFF	OFF	32KHz	OFF
CAMERA	Power switch ON- Auto power OFF	OFF	OFF	32KHz	OFF
	OLED finder	ON	ON	4 MHz	ON
Play back		ON	OFF	4 MHz	ON

Table 5-3. Camera Mode

Note) 4 MHz = Main clock operation, 32 kHz = Sub clock operation

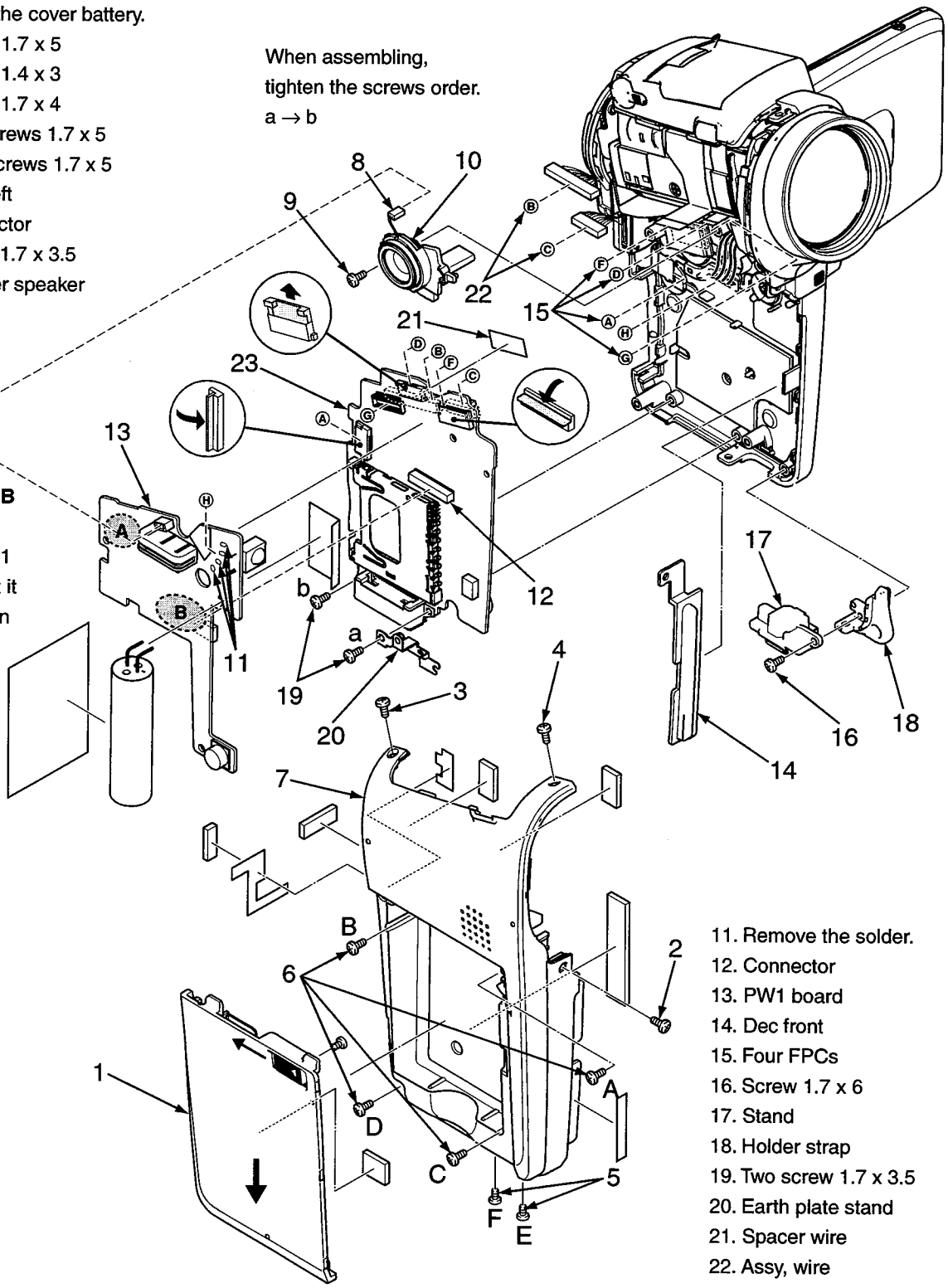
2. DISASSEMBLY

2-1. REMOVAL OF CABI LEFT, PW1 BOARD AND CP1 BOARD

1. Open the cover battery.
2. Screw 1.7 x 5
3. Screw 1.4 x 3
4. Screw 1.7 x 4
5. Two screws 1.7 x 5
6. Four screws 1.7 x 5
7. Cabi left
8. Connector
9. Screw 1.7 x 3.5
10. Holder speaker

When assembling,
tighten the screws order.
a → b

Press **A** and **B** evenly when installing PW1 board so that it does not go in at an angle.



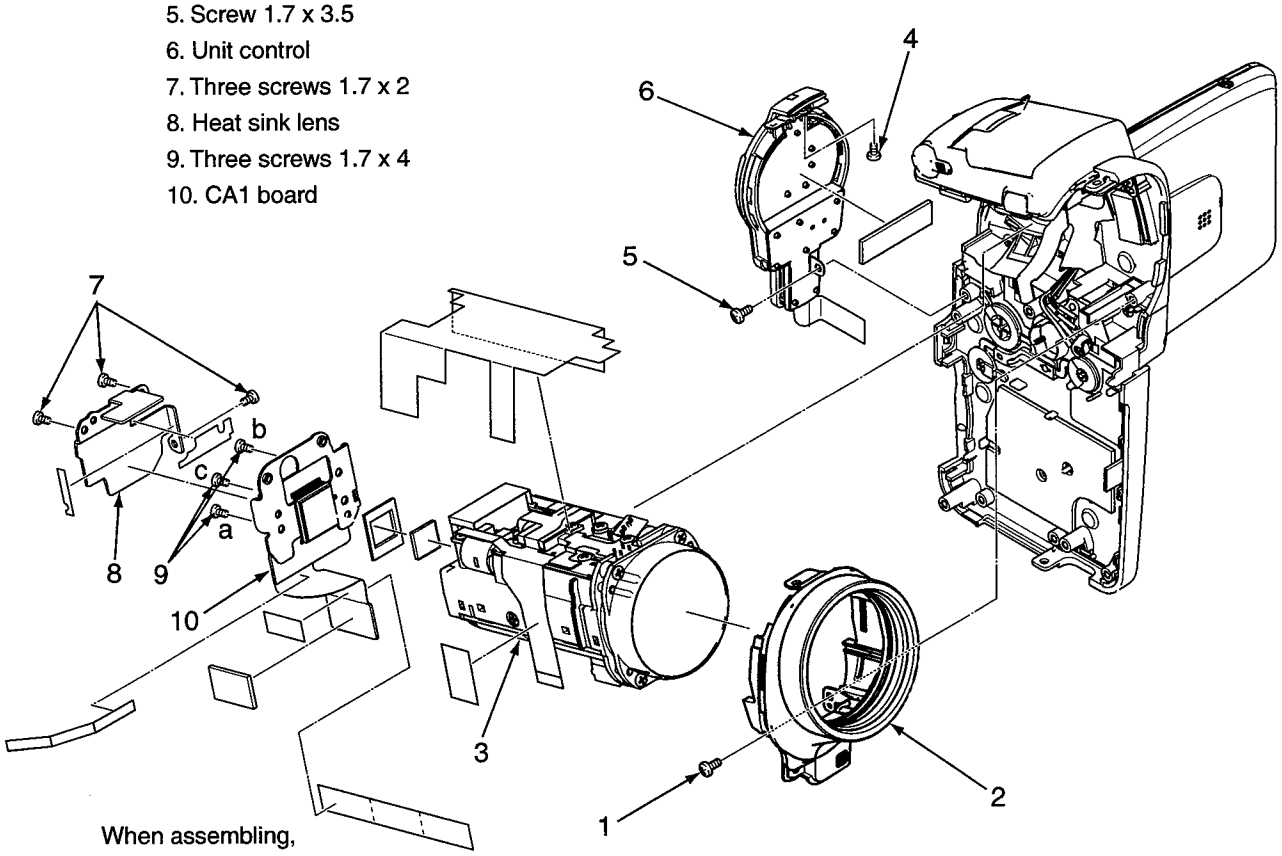
11. Remove the solder.
12. Connector
13. PW1 board
14. Dec front
15. Four FPCs
16. Screw 1.7 x 6
17. Stand
18. Holder strap
19. Two screw 1.7 x 3.5
20. Earth plate stand
21. Spacer wire
22. Assy, wire
23. CP1 board

NOTE: Discharge a strobe capacitor with the discharge jig (VJ8-0188) for electric shock prevention.

When assembling,
tighten the screws order.
A → B → C → D → E → F

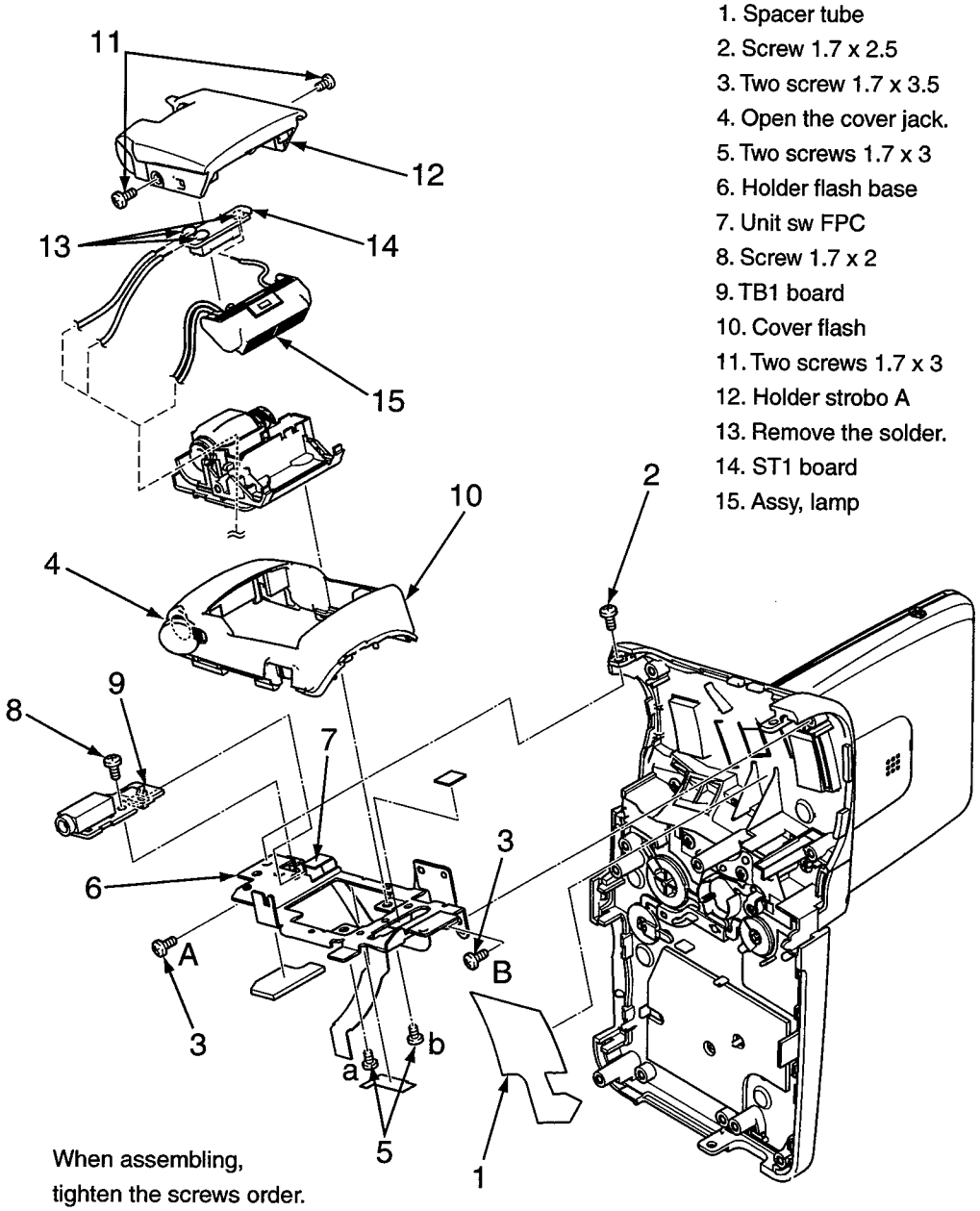
2-2. REMOVAL OF LENS ASSEMBLY AND CA1 BOARD

1. Screw 1.7 x 3.5
2. Compl, cabi front
3. Assy lens
4. Screw 1.7 x 2
5. Screw 1.7 x 3.5
6. Unit control
7. Three screws 1.7 x 2
8. Heat sink lens
9. Three screws 1.7 x 4
10. CA1 board



When assembling,
assemble order.
a → b → c

2-3. REMOVAL OF TB1 BOARD AND ST1 BOARD



1. Spacer tube
2. Screw 1.7 x 2.5
3. Two screw 1.7 x 3.5
4. Open the cover jack.
5. Two screws 1.7 x 3
6. Holder flash base
7. Unit sw FPC
8. Screw 1.7 x 2
9. TB1 board
10. Cover flash
11. Two screws 1.7 x 3
12. Holder strobo A
13. Remove the solder.
14. ST1 board
15. Assy, lamp

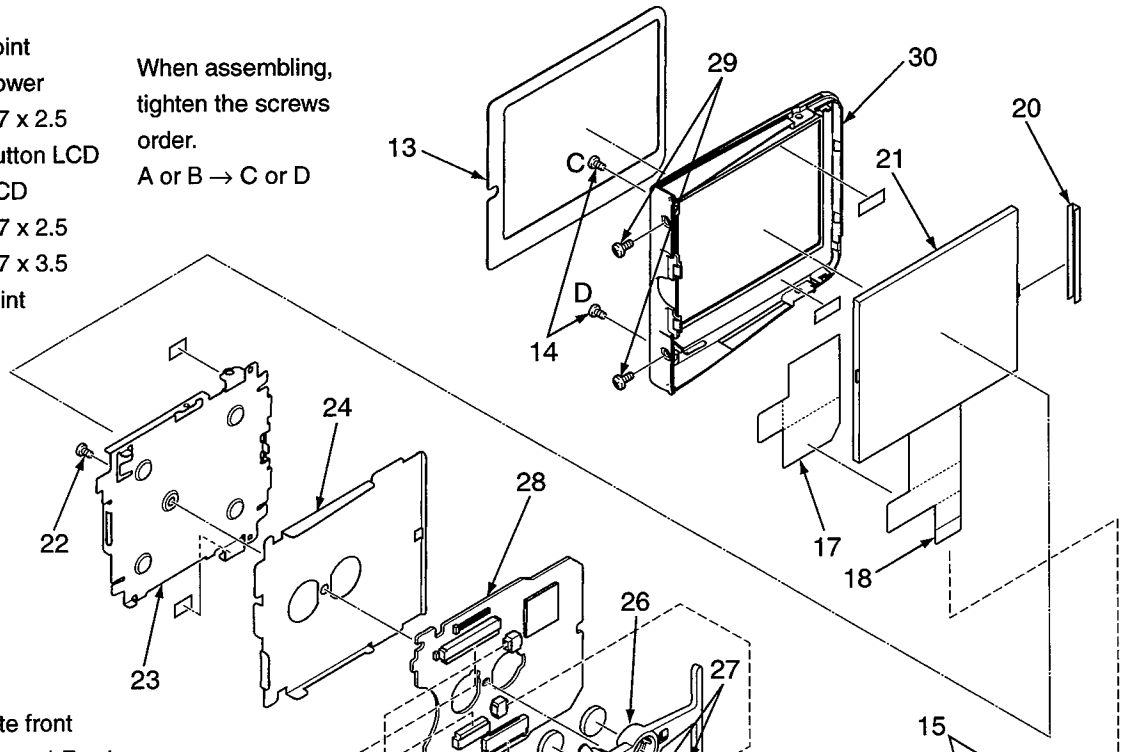
When assembling,
tighten the screws order.
A → B

When assembling,
tighten the screws order.
a → b

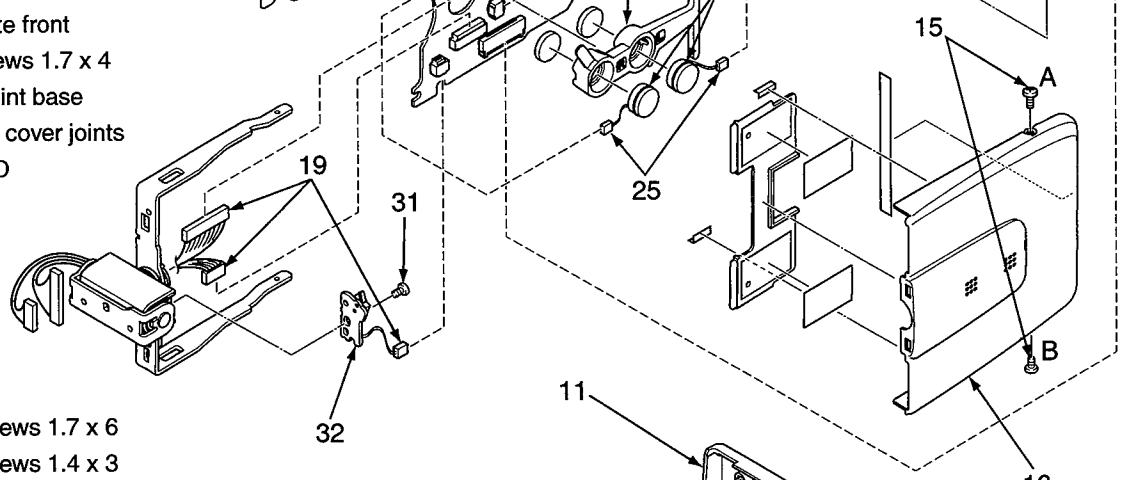
2-4. REMOVAL OF OLED, VF1 BOARD AND TB2 BOARD

1. Spacer joint
2. Button power
3. Screw 1.7 x 2.5
4. Spring button LCD
5. Button LCD
6. Screw 1.7 x 2.5
7. Screw 1.7 x 3.5
8. Holder joint

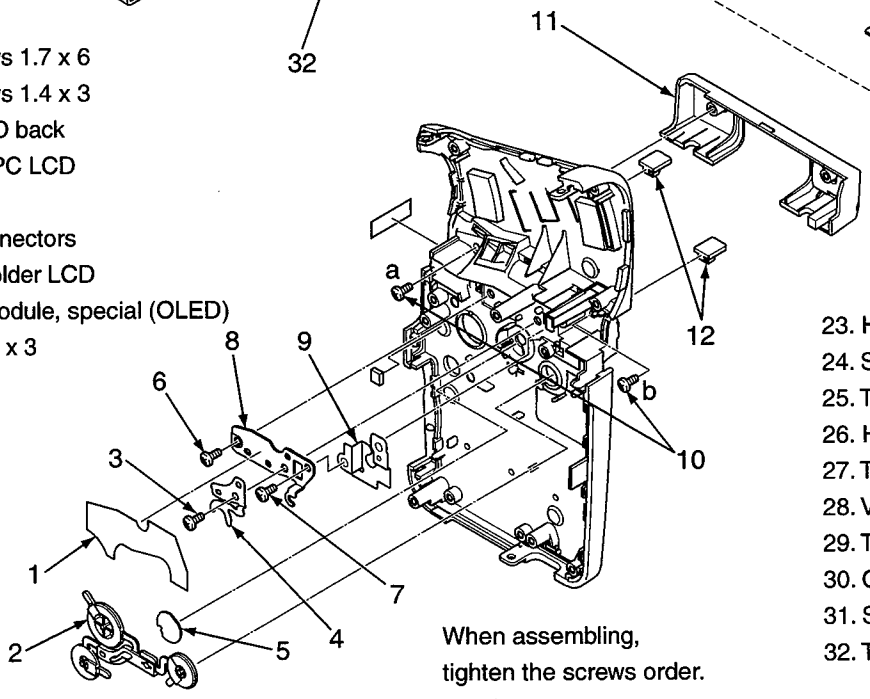
When assembling, tighten the screws order.
A or B → C or D



9. Earth plate front
10. Two screws 1.7 x 4
11. Cover joint base
12. Two dec cover joints
13. Dec LCD



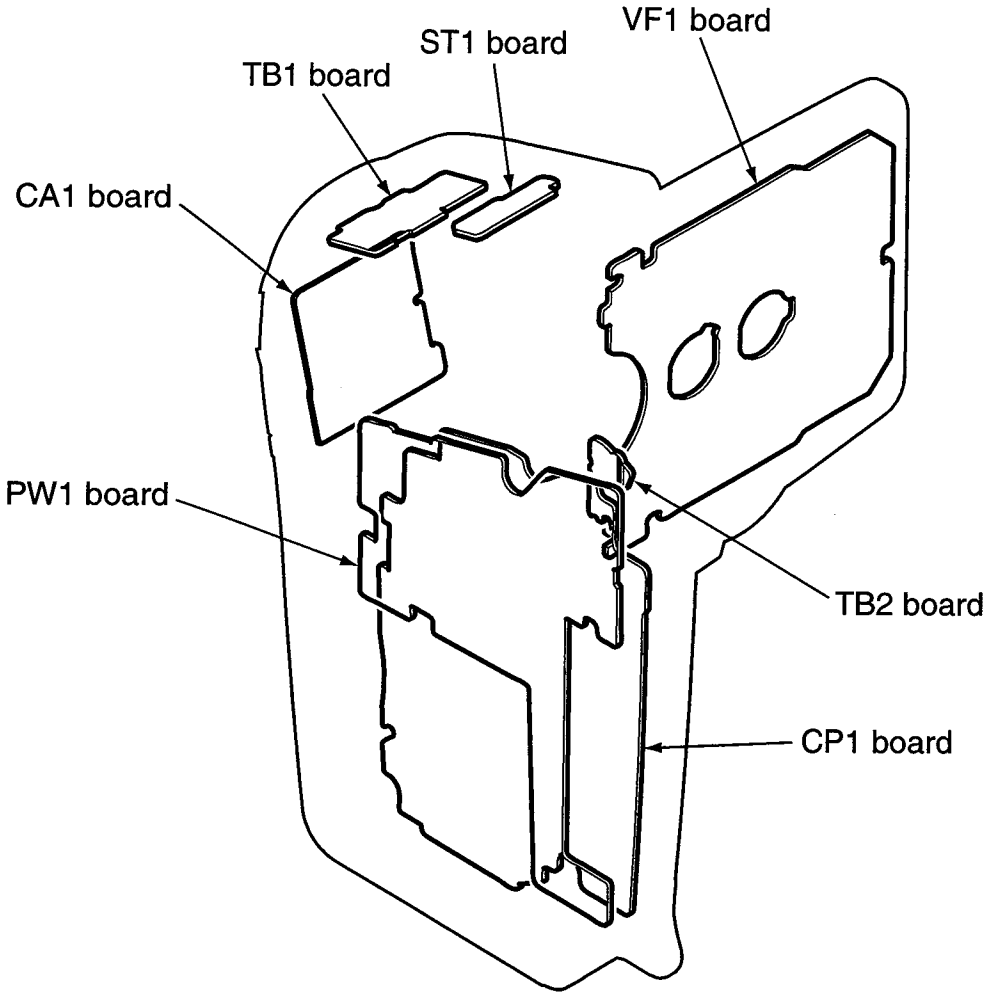
14. Two screws 1.7 x 6
15. Two screws 1.4 x 3
16. Cover LCD back
17. Spacer FPC LCD
18. FPC
19. Three connectors
20. Spacer holder LCD
21. Display module, special (OLED)
22. Screw 1.7 x 3



When assembling, tighten the screws order.
a → b

23. Holder monitor
24. Spacer VF1
25. Two connector
26. Holder mic
27. Two microphones
28. VF1 board
29. Two screws 1.7 x 2
30. Cover LCD front
31. Screw 1.7 x 2
32. TB2 board

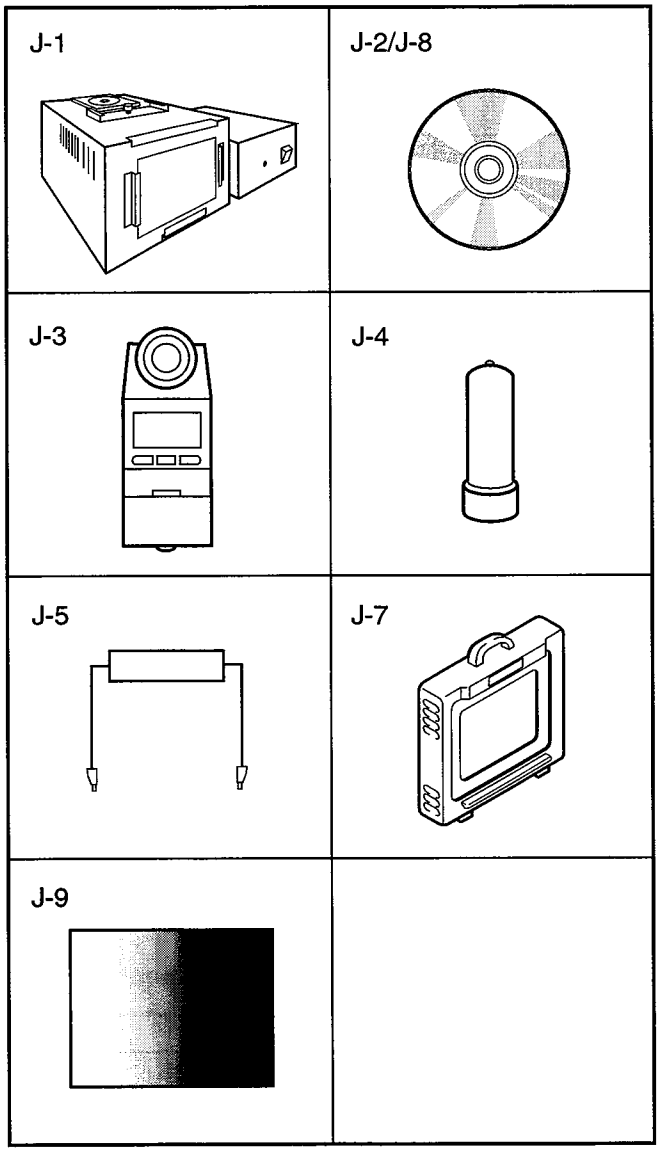
2-5. BOARD LOCATION



3. ELECTRICAL ADJUSTMENT

3-1. Table for Servicing Tools

Ref. No.	Name	Number	Part code
J-1	Pattern box	1	VJ8-0190
J-2	Calibration software	1	VJ8-0273
J-3	Chroma meter	1	VJ8-0192
J-4	Spare lump	1	VJ8-0191
J-5	Discharge jig	1	VJ8-0188
J-6	Collimator	1	VJ8-0260
J-7	Color viewer	1	VJ8-0007
J-8	Low-level grayscale data	1	VJ8-0275
J-9	Gradation chart	1	VJ8-0276



3-2. Equipment

1. Oscilloscope
2. Frequency counter
3. AC adaptor
4. PC (IBM®-compatible PC, Pentium processor, Window 98 or Me or 2000 or XP)

3-3. Adjustment Items and Order

1. IC501 Oscillation Frequency Adjustment
2. Lens Adjustment
3. AWB Adjustment
4. CCD Inter-channel Correlation Adjustment
5. CCD White Point Defect Detect Adjustment
6. CCD Black Point And White Point Defect Detect Adjustment In Lighted
7. OLED White Balance Adjustment

Note: If the lens, CCD and board and changing the part, it is necessary to adjust again. Item 2-6 adjustments should be carried out in sequence.

3-4. Setup

1. System requirements

Windows 98 or Me or 2000 or XP
IBM®-compatible PC with pentium processor
CD-ROM drive
USB port, 40 MB RAM
Hard disk drive with at least 15 MB available
VGA or SVGA monitor with at least 256-color display

2. Installing calibration software

1. Insert the calibration software installation CD-ROM into your CD-ROM drive.
2. Open the explorer.
3. Copy the DscCalDl_152 folder on the CD-ROM in the CD-ROM drive to a folder on the hard disk.

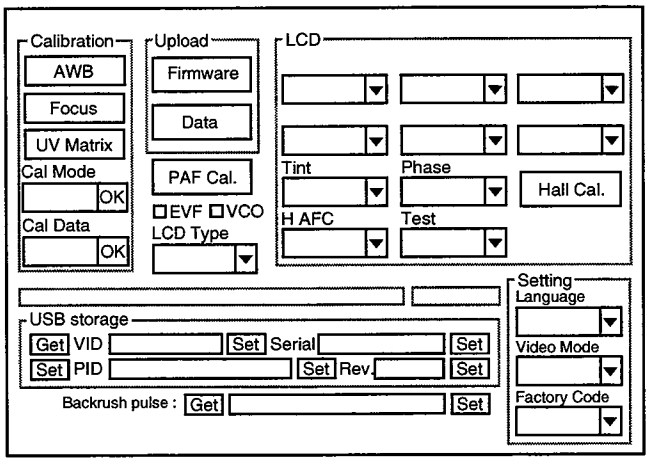
3. Installing USB driver

Install the USB driver with camera or connection kit for PC.

4. Pattern box

Turn on the switch and wait for 30 minutes for aging to take place before using Color Pure. It is used after adjusting the chroma meter (VJ8-0192) adjust color temperature to 3100 ± 20 K and luminosity to 900 ± 20 cd/m². Be careful of handling the lump and its circumference are high temperature during use and after power off for a while.

5. Computer screen during adjustment



3-5. Connecting the camera to the computer

1. Connect the cable adaptor to the camera.
2. Insert the USB cable to the USB/AV terminal of the cable adaptor.
3. Locate a USB port on your computer.
4. Insert the AC adaptor's cable to the DC IN terminal of the cable adaptor.
5. Turn on the camera.
6. If "USB CONNECTION" is displayed, choose the "CARD READER", and press the SET button.

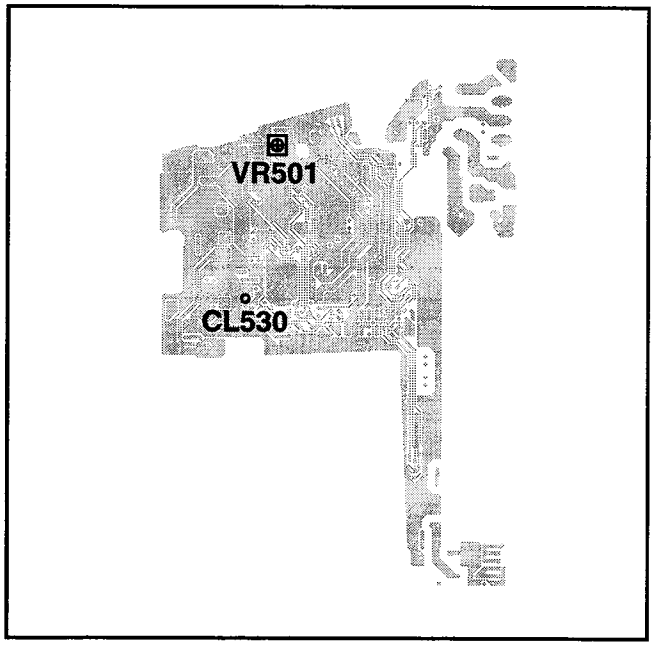
3-6. The adjustment item which in necessary in part exchange

	IC501 Oscillation Frequency Adjustment	Lens Adjust-ment	AWB Adjust-ment	CCD Inter-channel Correlation Adjustment	CCD White Point Defect Detect Adjustment	CCD Black Point And White Point Defect Detect Adjustment In Lighted	OLED Panel White Balance Adjust-ment	Factory Cord Setting	Language Setting	USB storage information registration	Reset Setting
COMPL PWB CP-1 (636 089 3771)		○	○	○	○	○	○	○	△	○	○
COMPL PWB VF-1 (636 089 3795)							○				
COMPL PWB PW-1 (636 089 3801)	○										
COMPL PWB ST-1 (636 089 3818)											
COMPL PWB CA-1 (636 089 3856)		○	○	○	○	○					
LENS ASSY (636 079 5824)		○	○								
OLED PANEL (636 079 4353)							○				

○ : Be sure to carry out the necessary adjustments after replacing the unit.
△ : Adjustment is possible from the menu setting screen of the camera and by using the calibration software.

3-7. Adjust Specifications

[PW1 board (Side A)]



Note:

1. Frequency adjustment is necessary to repair in the PW1 board and replace the parts.

Preparation:

1. Remove the cabinet left. You can see VR501 and CL530 in the CP1 board.
2. Insert the SD card.
3. Set the main switch to the REC.
4. Press the power button, and comfirm that the through image from CCD can be seen in the OLED.

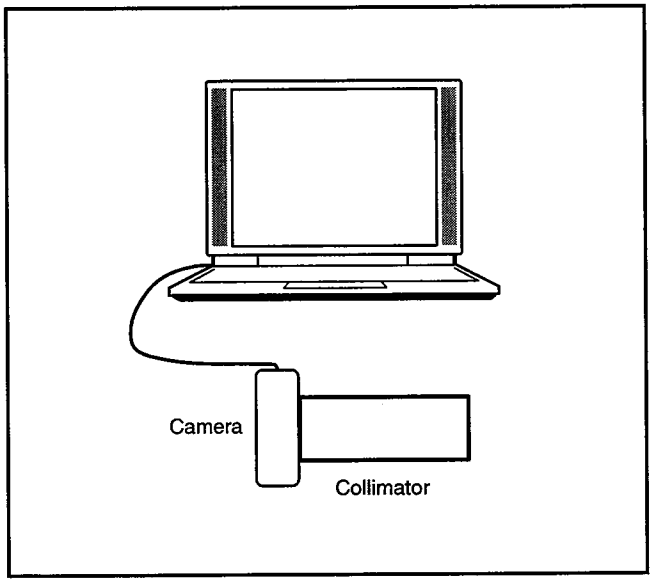
1. IC501 Oscillation Frequency Adjustment

Measuring Point	CL530
Measuring Equipment	Frequency counter
ADJ. Location	VR501
ADJ. Value	2022.5 ± 2 kHz

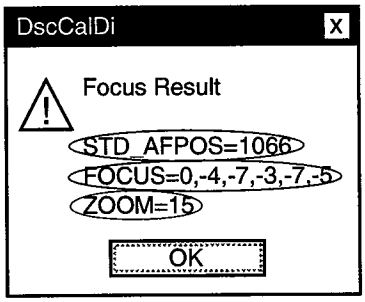
Adjustment method:

1. Adjust with VR501 to 2022.5 ± 2 kHz.

2. Lens Adjustment

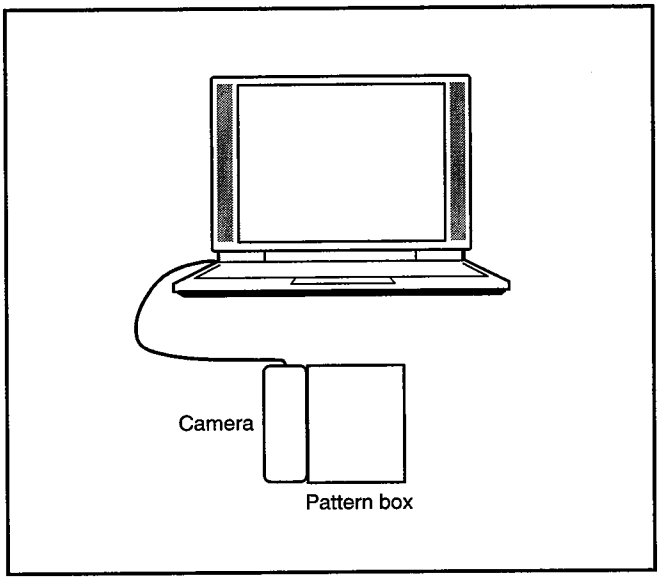


Preparation:
POWER switch: ON
If using a ready-made collimator, set to infinity.
Note:
Do not vibrate during the adjustment.
Adjustment method:
1. Set the camera 0 cm from the collimator. (Do not enter any light.)
2. Set the camera so that it becomes center of the screen in the collimator.
3. Double-click on the DscCalDi.exe.
4. Click the Focus, and click the Yes.
5. Lens adjustment value will appear on the screen.
6. Click the OK.

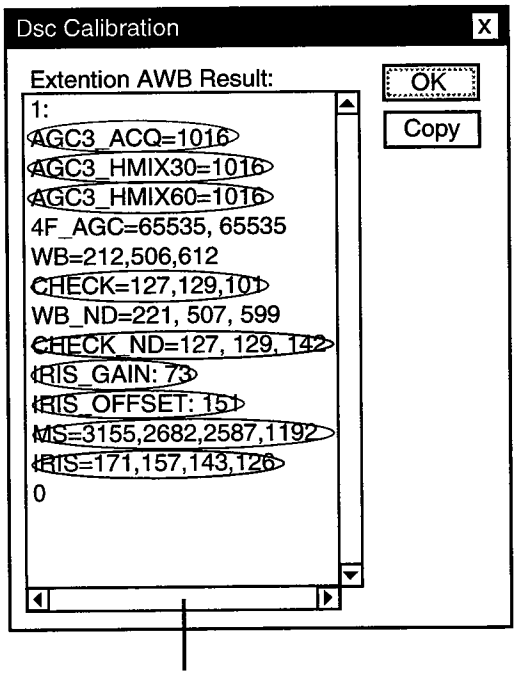


Adjustment value determination is effectuated using the "STD AFPOS", "FOCUS" and "ZOOM" values.
If FOCUS=focus1, focus2, focus3, focus4, focus5, focus6, ZOOM = pz_adj and the adjustment values fulfill the conditions below, they are determined as within specifications.
Adjustment value determination
1003<=STD_AFPOS<=1103
focus1=0, -81<=focus2<=+81, -91<=focus3<=+91,
-85<=focus4<=+85, -81<=focus5<=+81, -90<=focus6<=+90
-19<=pz_adj<=19

3. AWB Adjustment



Preparation:
POWER switch: ON
Setting of pattern box:
Color temperature: 3100 ± 20 (K)
Luminance: 900 ± 20 (cd/m²)
Adjusting method:
1. When setting the camera in place, set it to an angle so that nothing appears in any part of the color viewer except the white section. (Do not enter any light.)
2. Double-click on the DscCalDi.exe.
3. Click the AWB, and click the Yes.
4. AWB adjustment value will appear on the screen.
5. Click the OK.



When all of the AWB adjustment screen is not displayed, use a scroll bar.

Adjustment value determination is effectuated using the "AGC3_ACQ", "AGC3_HMIX30", "AGC3_HMIX60", "CHECK", "CHECK_ND", "IRIS_GAIN", "IRIS_OFFSET", "MS" and "IRIS" values. If

AGC3_ACQ= a1
AGC3_HMIX30= b1
AGC3_HMIX30=c1
CHECK= wc0, wc1, wc2
CHECK_ND= wnc0, wnc1, wnc2
IRIS_GAIN= g,
IRIS_OFFSET= o,
MS= ms1, ms2, ms3, ms4, ms5
IRIS= s1, s2, s3, s4, s5

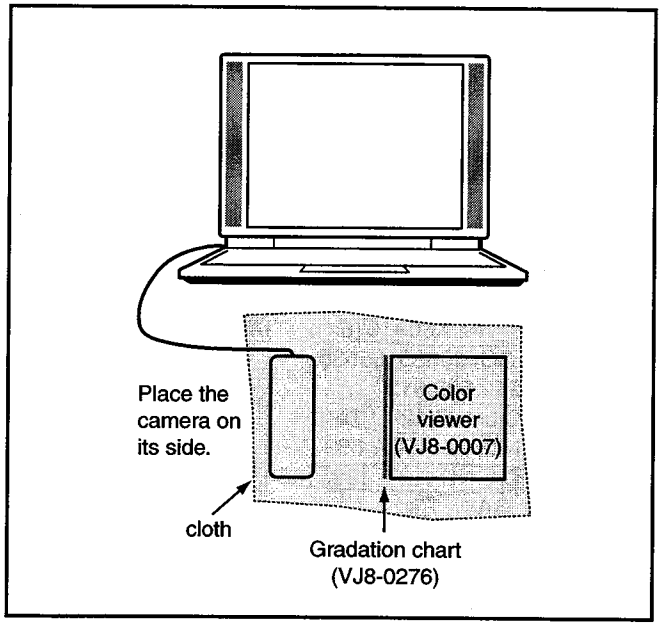
the adjustment values fulfill the conditions below, they are determined as within specifications.

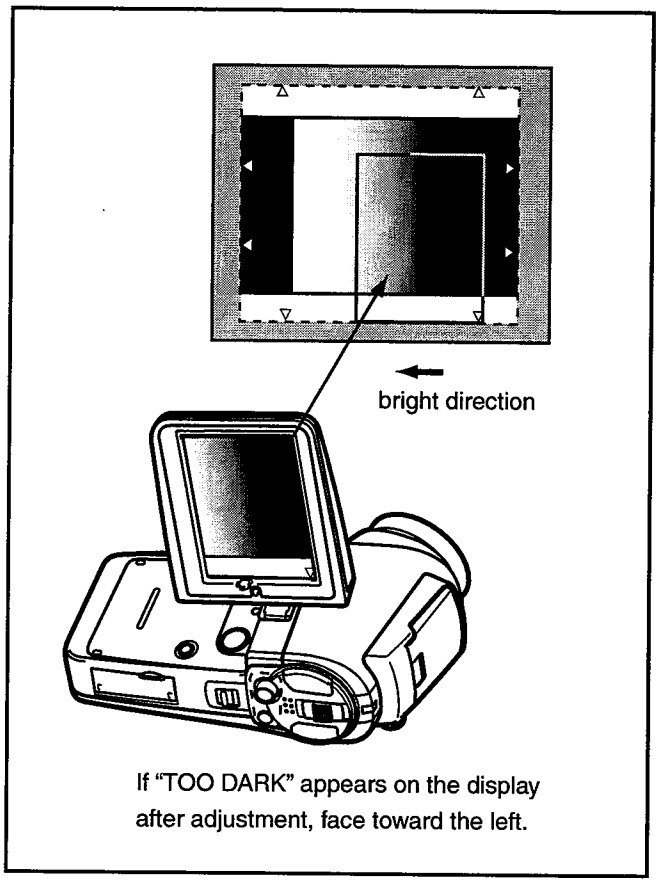
Adjustment value determination

1000<=a1<=3000, 1000<=b1<=3000, 1000<=c1<=3000
wc0=128 ± 2, wc1=128 ± 2, wc2=130 ± 40
wnc0=128 ± 2, wnc1=128 ± 2, wnc2=130 ± 40
0<=g<=255
0<=o<=255
1328<ms1<3528, 1289<ms2<3489, 1077<ms3<3277,
463<ms4<2663, 333<ms5<2533
104<=s1<=214, 104<=s2<=214, 104<=s3<=214,
104<=s4<=214, 104<=s5<=214
s1>s2>s3>s4>s5

Adjustment values other than the above are irrelevant.

4. CCD Inter-channel Correlation Adjustment





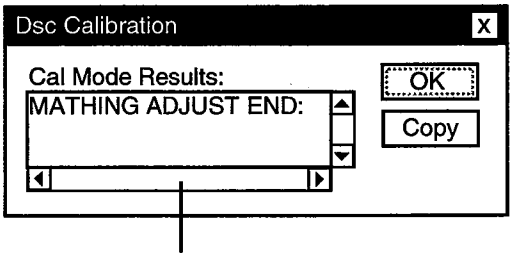
If "TOO DARK" appears on the display after adjustment, face toward the left.

Preparation:

POWER switch: ON
Setting of color viewer (VJ8-0007):
Color temperature: 5500 (K)
Luminance: 900 (cd/m²)
Gradation chart (VJ8-0276):
(Right side is dark and left side is bright when facing toward the light source.)
Distance: Fix at the place where the face angle sizes match.
(Place a cloth or similar over the top to shade from extraneous light.)

Adjusting method:

1. Set to REC mode and then turn on TV mode without image stabilization activated.
2. Connect the camera and the computer by using the USB cable.
3. Place the camera on its side.
(Set so that the triangle at the bottom-right appears in the bottom-right of the organic EL display.)
(The display's face angle should be parallel to the line at the bottom.)
4. Double-click on the DscCalDi.exe.
5. Input "171" in the Cal Mode dialog box, and click the "Ok".
6. The adjustment result will appear on the screen.



When all of the AWB adjustment screen is not displayed, use a scroll bar.

Adjustment value determination

If "2CH MATHING ADJUST END:" is displayed, adjustment is okay. If the adjustment is not okay, something else will be displayed.

If "MATHING ADJUST ENVIRONMENT TOO DARK" is displayed, turn toward a brighter direction and then readjust.

If "MATHING ADJUST ENVIRONMENT TOO BRIGHT" is displayed, turn toward a darker direction and then readjust.

If "MATHING ADJUST ENVIRONMENT ERR: ???" or "MATHING ADJUST Err: Table not refreshed" is displayed, readjust.

5. CCD White Point Defect Detect Adjustment

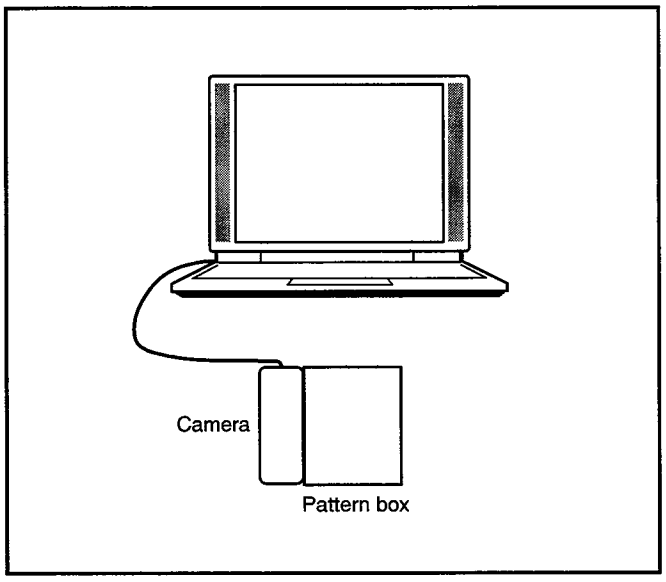
Preparation:

POWER switch: ON

Adjustment method:

1. Double-click on the DscCalDi.exe.
2. Select "CCD Defect" on the LCD "Test", and click the "Yes".
3. After the adjustment is completed, OK will display.
4. Click the OK.

6. CCD Black Point And White Point Defect Detect Adjustment In Lighted



Preparation:

POWER switch: ON

Setting of pattern box:

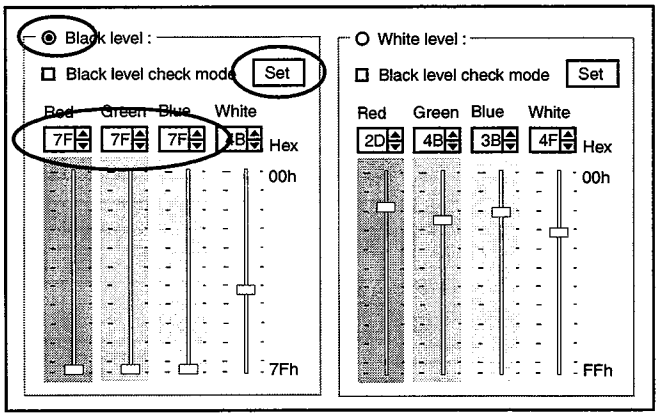
Color temperature: 3100 ± 20 (K)

Luminance: 900 ± 20 (cd/m²)

Adjusting method:

1. Set the camera 0 cm from the pattern box. (Do not enter any light.)
2. Double-click on the DscCalDi.exe.
3. Select "CCD Black" on the LCD "Test", and click the "Yes".
4. After the adjustment is completed, the number of defect will appear.
5. Click the OK.

7. OLED White Balance Adjustment



Preparation:

POWER switch: ON

Copy the low-level grayscale data (VJ8-0275) to the SD card separately for each holder (DCIM).

Adjusting method:

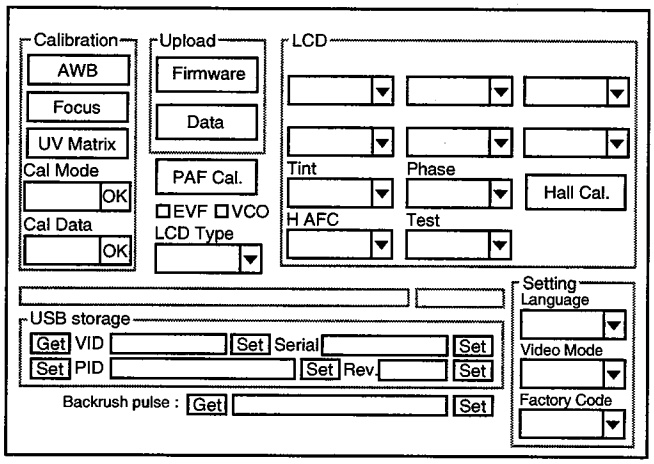
1. Double-click on the DscCalDi.exe.
2. Select "Black level" from the "Organic EL Cal." menu, set "Red", "Green" and "Blue" to "7F", and then click "Set".
3. Close the calibration soft. The setting values will be applied to the camera.
4. Remove the USB cable from the camera.
5. Set the play mode, turn on the camera.
6. Insert the SD card that contains the low-level grayscale data and display the data on the organic EL display.
7. If differences can be identified in the luminance levels of the black portions in the grayscale image, adjustment is complete. (Check with the surroundings shaded.)

3-8. Factory Code Setting

1. Check the "Factory Code" display within the Setting group.
2. **For U.S.A., Canada and NTSC general area**
   If "FC_SANYO_U" does not appear, click on the "▼" mark located on the right of the "Factory Code" display BOX and select "FC_SANYO_U".
3. **For Europe and PAL general area**
   If "FC_SANYO_EX" does not appear, click on the "▼" mark located on the right of the "Factory Code" display BOX and select "FC_SANYO_EX".

3-9. Language Setting

1. Click on the "▼" mark located on the right of the "Language" display BOX.
2. Select language. (Default is English.)
3. End "DscCal" and remove the camera before turning the camera power OFF.



3-10. Reset Setting

Carry out reset settings after replacing CP1 board.

1. Turn on the camera.
2. Press the MENU button.
3. Choose the OPTION.
4. Choose the RESET SETTINGS, and press the SET button.
5. Select Yes, and press the SET button.

3-11. The Compulsive boot starting method

1. Keep MENU button, SET button, and SHUTTER button depressed while switching on the power.
2. Connect the camera and the computer with USB cable.

3-12. Firmware uploading procedure

1. Uploading the firmware should be carried out if the version number (COMPL PWB XX-X) on the replacement circuit board is lower than the version of the distributed firmware. For XX-X, enter the name of the circuit board containing the firmware.
2. The firmware is distributed by e-mail in self-extracting archive format. Change the extension of the distributed file to .EXE and save it in your preferred folder.
3. When you double-click the saved file, the firmware (binary file) will be saved in the same folder.
4. The firmware must not be distributed without permission.

1. Overwriting firmware from the SD card

Preparation:

SD card: SD card with firmware rewritten into the root directory

Data: S812Nxxx.BIN (xxx: version)

Overwriting method:

1. Insert the above SD card.
2. Turn on the camera.
3. Set the main switch to the PLAY.
4. Press the MENU button. The playback setting screen appears.
5. Choose the OPTION icon.
6. Choose the FORMAT.
7. Toggle the SET button to the left for 2 seconds. FIRMWARE UPDATE will display.
8. Choose YES.
9. Press the SET button. Update is starting.

Note:

Do not turn off the camera's power or remove the SD card while the firmware is being updated.

The power will turn on automatically after the update is complete.

2. Overwriting firmware from the calibration software

Preparation:

PC with overwriting firmware copied to the preferred folder in the HD.

Data: S812Nxxx.BIN (xxx: version)

Overwriting method:

1. Connect the camera's USB/AV terminal to the computer' USB connector.
2. The USB Connection screen appears on the camera's LCD monitor. Choose the "CARD READER", and press the SET button.
3. Double-click on the DscCalDi.exe.
4. Click the Firmware.
5. Choose the fimware file to use for overwriting, and click the Yes.
6. Update is starting. The message will appear, and choose OK.
7. After the update is complete, disconnect the USB cable and turn the camera's power off.

Note:

Do not turn off the camera's power while the firmware is being updated.

4. USB STORAGE INFORMATION REGISTRATION

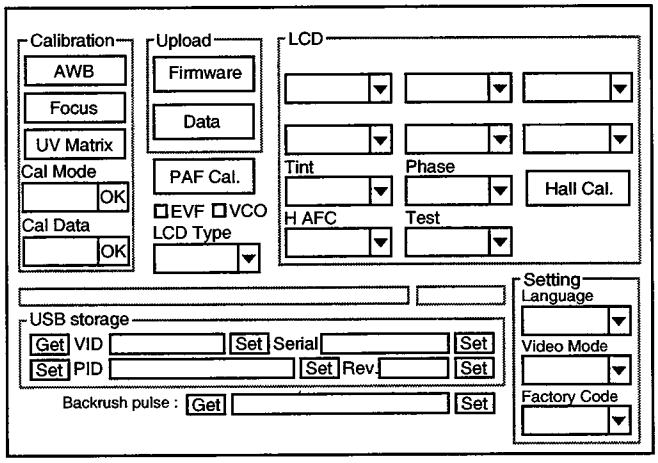
USB storage data is important for when the camera is connected to a computer via a USB connection.
If there are any errors in the USB storage data, or if it has not been saved, the USB specification conditions will not be satisfied, so always check and save the USB storage data.

Preparation:

POWER switch: ON

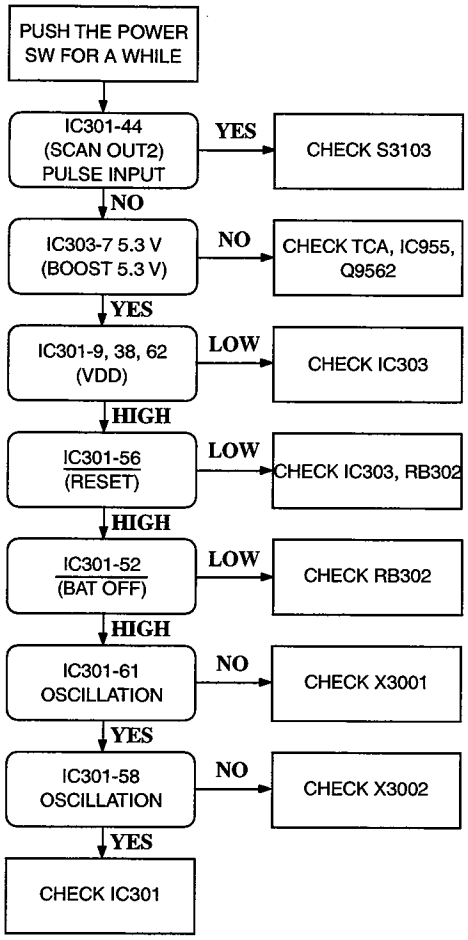
Adjustment method:

1. Connect the camera to a computer. (Refer to 3-5. Connecting the camera to the computer on the page 18.)
2. Double-click on the DscCalDi.exe.
3. Click on the Get button in the USB storage window and check the USB storage data.
   VID: SANYO
   PID: HD1
   Serial:
   Rev. : 1.00
4. Check the "Serial" in the above USB storage data. If the displayed value is different from the serial number printed on the base of the camera, enter the number on the base of the camera. Then click the Set button.
5. Next, check VID, PID and Rev. entries in the USB storage data. If any of them are different from the values in 3. above, make the changes and then click the corresponding Set button.

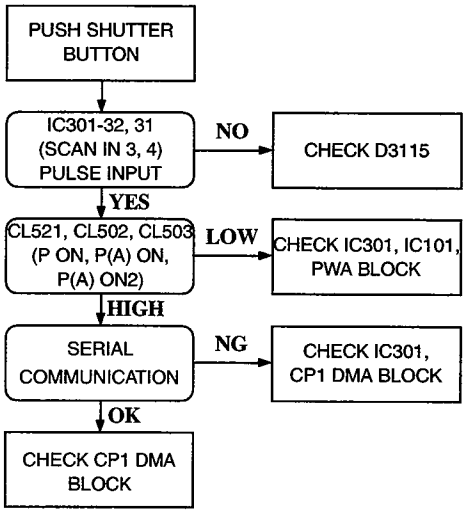


5. TROUBLESHOOTING GUIDE

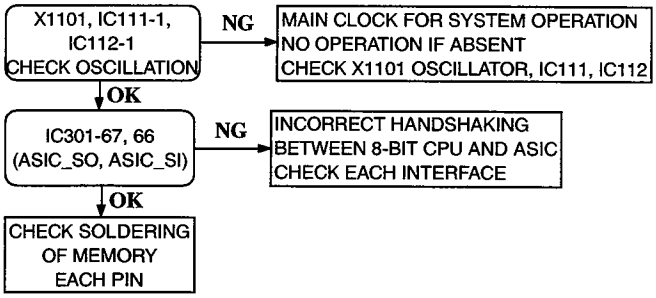
POWER LOSS INOPERTIVE



TAKING INOPERATIVE



NO PICTURE



MEMO

6. PARTS LIST

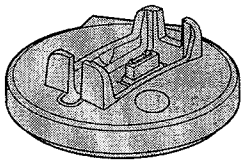
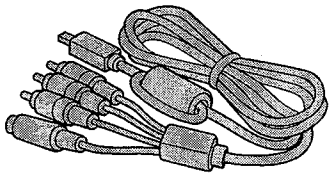
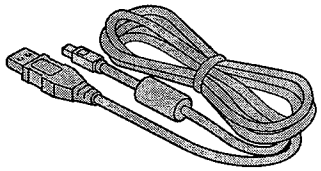
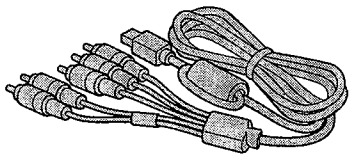
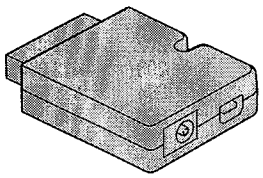
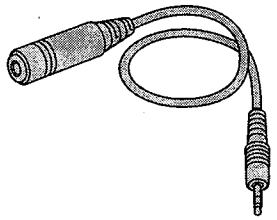
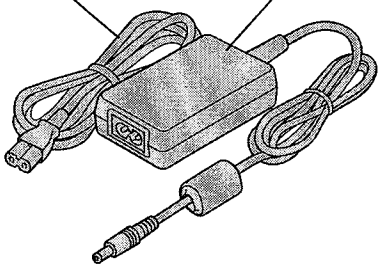
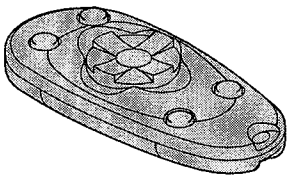
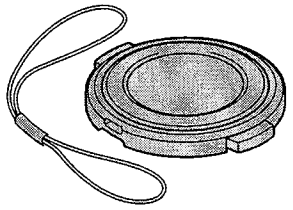
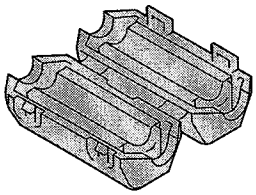
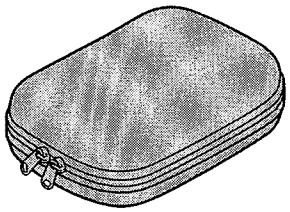
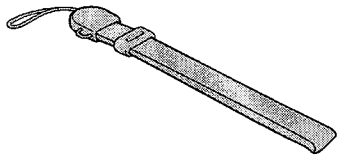
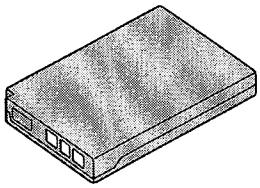
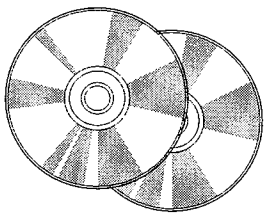
PACKING MATERIALS

LOCATION	PARTS NO.	DESCRIPTION
7001	636 090 9861	CARTON INNER-SX812/EX, VPC-HD1EX, VPC-HD1E
7001	636 090 9854	CARTON INNER-SX812/U, VPC-HD1 ONLY
7002	636 077 8139	CUSHION SHEET-SX774/KRO
7003	636 090 9885	REINFOECE PAD,A-SX812/J (BOTTOM)
7004	636 090 9892	REINFOECE PAD,B-SX812/J (TOP)

ACCESSORIES

LOCATION	PARTS NO.	DESCRIPTION
Note: Refer to the table of accessories		
1	645 079 5985	ADAPTOR,DOCKING STATION
2	645 080 4434	CABLE,DSC A/V-SX812 (Dedicated SAV interface cable)
3	645 080 4441	CABLE,DSC USB,SX812 (Dedicated USB interface cable)
4	645 080 4458	CABLE,DSC COMPONENT-SX812 (Dedicated component cable)
5	645 079 5992	ADAPTOR,CABLE-SX812
6	645 080 4724	CABLE,DSC 2.5-3.5 SX812(Microphone connection cable)
7 ⚠	645 080 8876	CORD,POWER-1.2MK,VPC-HD1E ONLY
OR ⚠	645 036 7434	CORD,POWER-1.2MK,VPC-HD1E ONLY
7 ⚠	645 076 0235	CORD,POWER-1.5MK,VPC-HD1EX ONLY
OR ⚠	645 057 1503	CORD,POWER-1.2MK,VPC-HD1EX ONLY
7 ⚠	645 057 1510	CORD,POWER-1.9MK,VPC-HD1 ONLY
8 ⚠	645 080 6070	ADAPTOR,AC-DC
9	645 080 4328	REMOCON,INFRARED(Remote control unit)
10	636 090 4231	ASSY,CAP LENS-SX812/J
11	645 044 3367	CORE,CLAMP (For external microphone)
12	636 090 9823	CASE SOFT-SX812/J (camera case)
13	636 090 9847	STRAP HAND-SX812/J
14 ⚠	645 080 6094	BATTERY,RECHARGE,LI-ION
15	645 080 4786	DISC,CD-ROM SSP 812 U1 (Sanyo Software Pack 7.3) PDF of INSTRUCTION MANUAL(English, Spanish, German, French, Dutch, Italy, Russian, Korean, Chinese Traditional/Simplified)
15	645 080 4793	DISC,CD-ROM SSP 812 U2 (Sanyio Software Pack 7.3) (N.S.P.)
16	636 090 5429	INSTRUCTION MANUAL(CAMERA/SOFTWARE) (English)

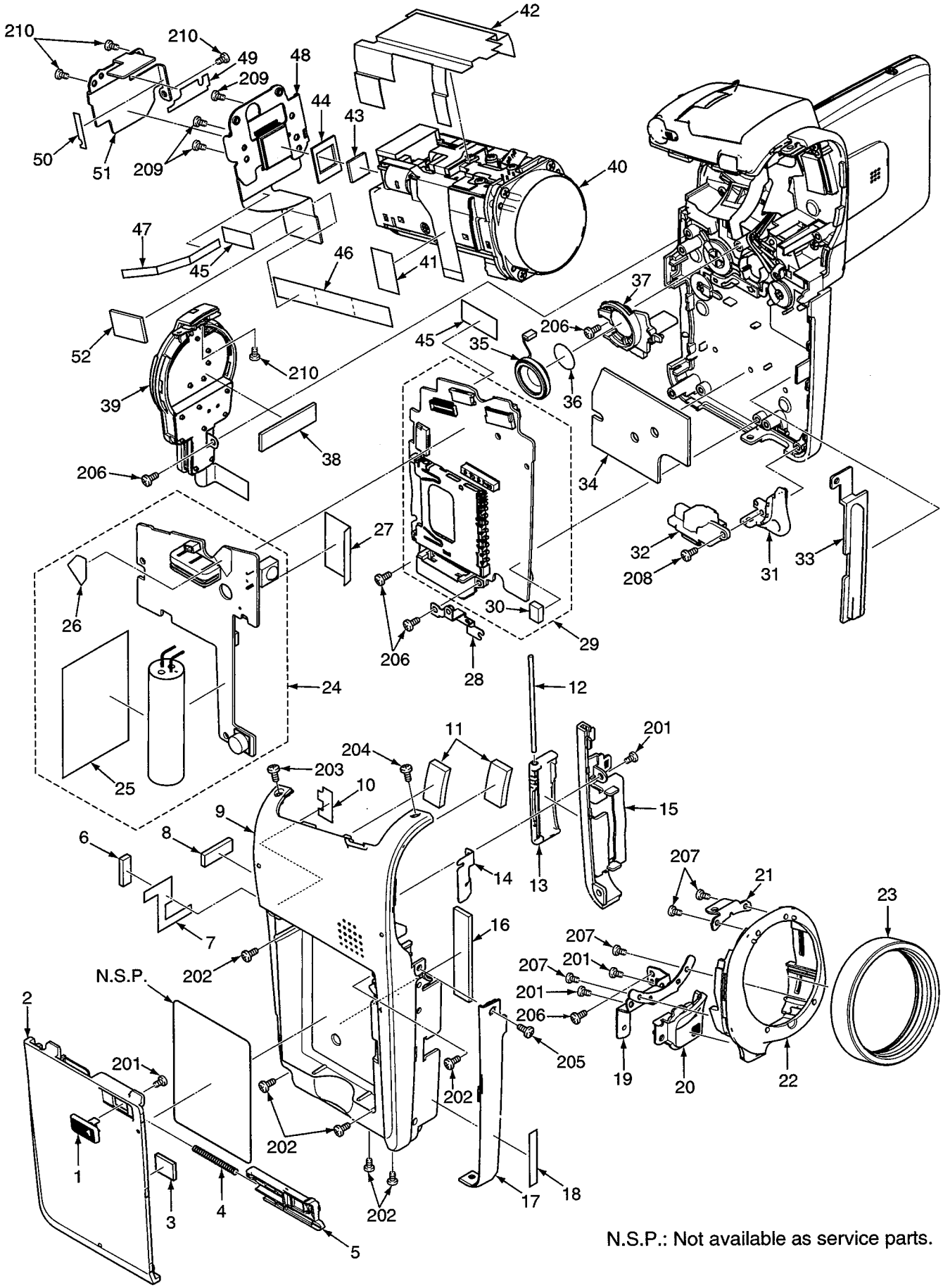
1.Table of accessories

1 	2 	3 
4 	5 	6 
7 8 	9 	10 
11 	12 	13 
14 	15 	

CABINET AND CHASSIS PARTS 1

LOCATION	PARTS NO.	DESCRIPTION
1	636 089 3917	BUTTON COVER BATT-SX812/J
2	636 089 4051	COVER BATTERY-SX812/J
3	636 091 6357	SPACER BATTERY-SX812/J
4	636 096 0749	SPRING COVER BATT-SX812/J
5	636 089 4433	SLIDE LOCK BATT-SX812/J
6	645 086 1505	PAD,GASKET(L=11)
7	636 095 8494	SHIELD TAPE BACK 1-SX812
8	645 086 1529	PAD,GASKET(L=4.5)
9	636 089 3955	CABINET LEFT-SX812/J
10	636 095 8548	SPACER SHIELD BACK1-SX812
11	636 090 8079	SPACER LENS RIGHT-SX812/J
12	636 073 6535	SHAFT COVER BATTERY-SX791
13	636 089 4044	COVER SD-SX812/J
14	636 089 4464	SPRING PLATE SD-SX812/J
15	636 089 6727	DEC LEFT BACK-SX812/J
16	636 094 0727	HEAT SINK RUBBER B-SX812
17	636 089 4136	DEC LEFT FRONT-SX812/J
18	636 095 8555	SHIELD TAPE FRONT 1-SX812
19	636 089 4266	HOLDER RING B-SX812/J
20	636 089 4112	DEC IR-SX812/J
21	636 089 4259	HOLDER RING A-SX812/J
22	636 089 3979	CABINET FRONT-SX812/J
23	636 089 4365	RING LENS-SX812/J
24	636 089 3801	COMPL PWB,PW-1
25	636 090 8017	SPACER CON-SX812/J
26	636 090 7973	SPACER TERMINAL-SX812/J
27	636 096 0251	SPACER FRONT-SX812/J
28	636 095 6612	EARTH PLATE STAND-SX812/J
29	636 092 2761	COMPL PWB,CP-1(F/W)
30	636 090 8147	SPACER CONDENSER-SX812
31	636 089 4204	HOLDER STRAP-SX812/J
32	636 089 4396	STAND-SX812/J, STAND
33	636 089 4129	DEC FRONT-SX812/J
34	636 094 0710	HEAT SINK RUBBER A-SX812
35	645 079 5701	SPEAKER,8
36	636 090 7935	ADHESIVE SPEAKER-SX812/J
37	636 089 4334	HOLDER SPEAKER-SX812/J
38	645 086 1482	PAD,GASKET(L=22)
39	645 080 4656	UNIT,CONTROL-SX812/J
40	645 079 5824	LENS(ASSY)
41	636 095 8760	SHIELD TAPE LENS 1-SX812
42	636 096 0633	SPACER LENS-SX812/J
43	645 080 5745	OPTICAL FILTER
44	636 089 8745	SPACER SX889
45	636 096 1142	SPACER WIRE-SX812/J
46	636 095 8753	SHIELD TAPE CA1 B-SX812
47	636 095 8746	SHIELD TAPE CA1 A-SX812
48	636 091 0973	COMPL PWB,CA-1 SV-SX812
49	636 090 8093	SPACER HEAT SINK UP-SX812
50	636 090 8130	SPACER HEAT SINK S-SX812
51	636 089 4198	HEAT SINK LENS-SX812/J
52	636 090 8109	SPACER PW1-SX812
201	411 177 0906	SCR S-TPG PAN PCS 1.7X3.5
202	412 070 1502	SP SCR HMPN1.7X5WP NEW-R
203	412 070 1205	SPSCR E2PN1.4X3WP
204	411 203 8609	SCR PAN PCS 1.7X4.0
205	411 205 0502	SCR PAN PCS 1.7X5
206	411 177 0906	SCR S-TPG PAN PCS 1.7X3.5
207	411 191 3303	SCR PAN PCS 1.4X5
208	411 180 1808	SCR S-TPG PAN PCS 1.7X6.0
209	411 178 9403	SCR S-TPG PAN PCS 1.7X4.0
210	411 184 0005	SCR PAN PCS 1.7X2.0

CABINET AND CHASSIS PARTS 1

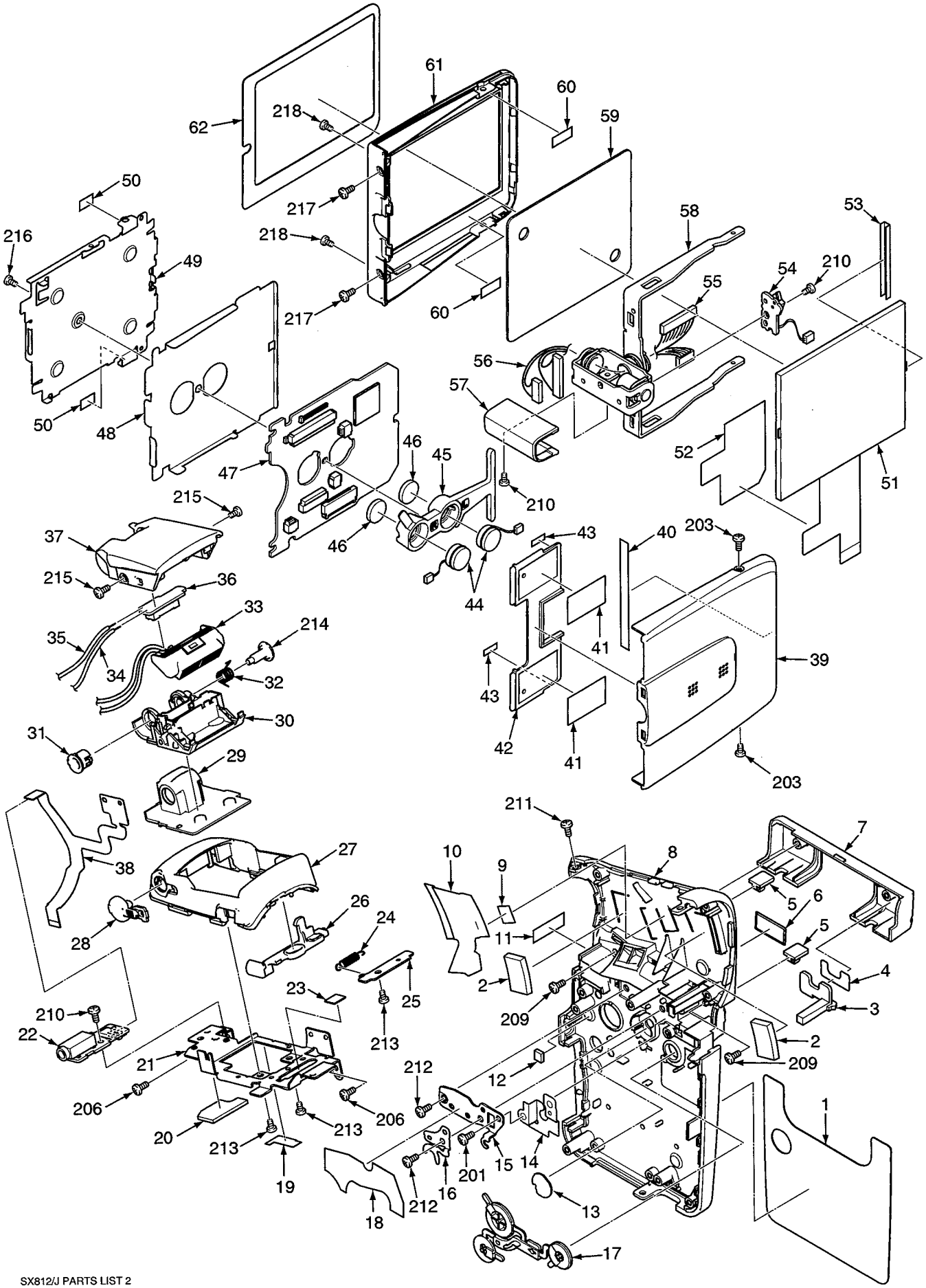


N.S.P.: Not available as service parts.

SX812/J PARTS LIST 1

CABINET AND CHASSIS PARTS 2

LOCATION	PARTS NO.	DESCRIPTION
1	636 089 4143	DEC RIGHT-SX812/J
2	636 090 8079	SPACER LENS RIGHT-SX812/J
3	636 089 4358	REFLECTOR LED-SX812/J
4	636 090 7942	ADHESIVE REFLECTOR-SX812
5	636 089 4174	DEC COVER JOINT-SX812/J
6	636 089 4099	DEC RIGHT BATCH-SX812/J
7	636 089 4020	COVER JOINT BASE-SX812/J
8	636 089 3962	CABINET RIGHT-SX812/J
9	636 090 7959	ADHESIVE TUBE-SX812/J
10	636 092 7346	SPACER TUBE-SX812/J
11	636 095 8562	SHIELD TAPE BACK 2-SX812
12	636 095 8579	SPACER CP1 A-SX812
13	636 089 3948	BUTTON LCD-SX812/J
14	636 095 6629	EARTH PLATE FRONT-SX812/J
15	636 089 4242	HOLDER JOINT-SX812/J
16	636 089 4457	SPRING BUTTON LCD-SX812/J
17	636 089 3931	BUTTON POWER-SX812/J
18	636 093 8434	SPACER JOINT-SX812/J
19	636 090 8055	SPACER STROBE TUBE-SX812
20	636 092 8534	SPACER STROBO-SX812/J
21	636 089 4235	HOLDER FLASH BASE-SX812/J
22	636 089 3825	COMPL PWB,TB-1
23	636 093 9103	SPACER SPRING-SX812/J
24	636 089 4495	SPRING RELEASE FLASH-812J
25	636 089 4228	HOLDER BUTTON-SX812/J
26	636 092 3379	ASSY,BUTTON RELEASE-812/J
27	636 089 4068	COVER FLASH-SX812/J
28	636 089 4075	COVER JACK-SX812/J
29	636 089 4303	HOLDER FLASH-SX812/J
30	636 089 4327	HOLDER STROBE B-SX812/J
31	636 089 5454	RING STROBE-SX812/J
32	636 089 4501	SPRING FLASH-SX812/J
33	645 083 4707	ASSY,LAMP-SX812
34	636 090 8819	ASSY,WIRE TRIG GND-SX812
35	636 090 8178	ASSY,WIRE TRIG IN-SX812
36	636 089 3818	COMPL PWB,ST-1
37	636 089 4310	HOLDER STROBE A-SX812/J
38	645 080 4168	UNIT,SW FPC-SX812
39	636 095 7329	COVER LCD BACK-SX812/J
40	636 095 0696	SPACER COVER LCD-SX812/J
41	636 090 7911	ADHESIVE DEC LCD-812
42	636 089 4167	DEC LCD TOP-SX812/J
43	645 086 1512	PAD,GASKET(L=8)
44	645 070 3638	MICROPHONE
45	636 089 4297	HOLDER MIC-SX812/J
46	636 096 0756	SPACER MIC-SX812/J
47	636 089 3795	COMPL PWB,VF-1
48	636 090 7966	SPACER VF1-SX812/J
49	636 089 4211	HOLDER MONITOR-SX812/J
50	645 086 1499	PAD,GASKET(L=2)
51	645 079 4353	DISPLAY MODULE,SPECIAL
52	636 090 8000	SPACER FPC LCD-SX812/J
53	636 095 7398	SPACER HOLDER LCD-SX812/J
54	636 089 3832	COMPL PWB,TB-2
55	636 095 7213	ASSY,WIRE VF1&CP1-2-SX812
56	636 095 7190	ASSY,WIRE VF1&CP1-1-SX812
OR	636 095 7206	ASSY,WIRE VF1&CP1-1-SX812
57	636 089 4037	COVER JOINT-SX812/J
58	636 089 2941	ASSY,JOINT-SX812/J
59	636 090 8154	SPACER MONITOR-SX812/J
60	636 095 8807	SHIELD TAPE VF A-SX812
61	636 089 4013	COVER LCD FRONT-SX812/J
62	636 089 4150	DEC LCD-SX812/J
201	411 177 0906	SCR S-TPG PAN PCS 1.7X3.5
203	412 070 1205	SPSCR E2PN1.4X3WP
206	411 177 0906	SCR S-TPG PAN PCS 1.7X3.5
209	411 178 9403	SCR S-TPG PAN PCS 1.7X4.0
210	411 184 0005	SCR PAN PCS 1.7X2.0
211	411 018 1604	SCR PAN PCS 1.7X2.5
212	411 176 1003	SCR PAN PCS 1.7X2.5
213	411 177 9503	SCR S-TPG PAN PCS 1.7X3
214	412 072 6406	SPECIAL SCREW-1.7X7
215	412 071 1105	SPECIAL SCREW-1.7X3
216	412 060 7903	SPECIAL SCREW-1.7X3.0
217	411 194 8404	SCR PAN PCS 1.7X2.0
218	411 181 7007	SCR S-TPG PAN PCS 1.7X6.0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ELECTRICAL PARTS

Note:

1. **Materials of Capacitors and Resistors are abbreviated as follows ;**

Resistors		Capacitors	
MT-FILM	Metallized Film Resistor	MT-POLYEST	Metallized Polyester Capacitor
MT-GLAZE	Metallized Glaze Resistor	MT-COMPO	Metallized Composite Capacitor
OXIDE-MT	Oxide Metallized Film Resistor	TA-SOLID	Tantalum Solid Capacitor
		AL-SOLID	Aluminum Solid Capacitor
		NP-ELECT	Non-Polarized Electrolytic Capacitor
		OS-SOLID	Aluminum Solid Capacitors with Organic Semiconductive Electrolytic Capacitor
		DL-ELECT	Double Layered Electrolytic Capacitor
		POS-SOLID	Polymerized Organic Semiconductor Capacitor

2. **Tolerance of Capacitor (10pF over) and Resistor are noted with follow symboles.**
   F .....1% G .....2% J .....5% K 10%
   M .....20% N .....30% Z .....+80% ~ -20%
3. **Capacitors**
   U : µF P : pF
4. **Inductors**
   UH : µH MH : mH
5. **N.S.P. : Not available as service parts.**

COMPL PWB,CP-1(F/W)

636 092 2761

LOCATION	PARTS NO.	DESCRIPTION	
	(SEMICONDUCTORS)		
Q1303	405 172 4700	TR UNR32A3	
OR	405 168 3700	TR DTC144EM	
OR	405 207 5009	TR RN1104FV	
Q1402	405 168 3809	TR DTA144EM	
OR	405 207 4804	TR RN2104FV	
OR	405 172 4908	TR UNR31A3	
Q1403	405 167 0403	TR EMD12	
Q1501	405 166 9605	TR EMT1	
Q1503	405 168 3908	TR EMZ1	
Q1505	405 186 7308	TR UP04213 00	
OR	405 181 1202	TR NSBC144EDXV6T5	
OR	405 173 4006	TR PEMH2	
OR	405 166 9506	TR EMH2	
Q3001	405 208 3905	TR EMB11	
Q3002	405 186 7308	TR UP04213 00	
OR	405 181 1202	TR NSBC144EDXV6T5	
OR	405 173 4006	TR PEMH2	
OR	405 166 9506	TR EMH2	
Q3004	405 196 0207	TR PDTC123EE	
OR	405 115 6709	TR DTC123EE	
Q3005	405 186 7308	TR UP04213 00	
OR	405 181 1202	TR NSBC144EDXV6T5	
OR	405 173 4006	TR PEMH2	
OR	405 166 9506	TR EMH2	
Q3006	405 200 9004	TR EML17	
Q9562	405 208 8603	TR FDC633N-NF	
Q9702	405 182 8507	TR EMH16	
	(INTEGRATED CIRCUITS)		
IC101	410 585 8306	IC KS755U2464CBP	BGA (N.S.P.)
IC102	410 599 9108	IC HDMOVIC	BGA (N.S.P.)
IC103	409 588 5405	IC EDS2532AABH-75	BGA (N.S.P.)
OR	409 588 5306	IC K4M563233E-EE1H	BGA (N.S.P.)
IC104	409 653 2704	IC EDS2532AABH-6B-E	BGA (N.S.P.)
IC111	409 656 6402	IC PL611-226TC-R	
IC112	409 656 6303	IC PL611-225TC-R	
IC121	409 647 9702	IC S29PL032J60BFI120	BGA (N.S.P.)
IC151	409 621 4709	IC LA73076V-TLM-E	
IC152	409 653 2803	IC TK15453V	
IC183	409 641 9401	IC WM8978GEFL	
IC187	409 665 5601	IC TK11129CS	
IC281	409 532 0203	IC LM62BIM3X	
IC301	410 601 5401	IC LC875924A-57J7-E	BGA (N.S.P.)
OR	410 587 2708	IC 87F5932A-F57J7-E	BGA (N.S.P.)
IC303	409 582 6200	IC BD4289FVM	
IC931	409 656 8901	IC AD9942BBCZ	
IC932	409 647 8408	IC AN20111A	
IC933	409 665 5601	IC TK11129CS	

LOCATION	PARTS NO.	DESCRIPTION
IC951	409 652 2507	IC AN41921A-VB
IC955	409 526 4002	IC XC9104D095M
IC971	409 646 8706	IC AK7331
	(DIODES)	
D1501	407 210 1900	DIODE 1SS400
OR	407 226 4803	DIODE BAS516
D3004	407 222 4807	LED SML-521MUW,
D3110	407 228 0506	DIODE HN1D01FE
OR	407 232 7706	DIODE NSDEMP11XV6T5
OR	407 227 3102	DIODE EMP11
D3111	407 228 0506	DIODE HN1D01FE
OR	407 232 7706	DIODE NSDEMP11XV6T5
OR	407 227 3102	DIODE EMP11
D3112	407 228 0506	DIODE HN1D01FE
OR	407 232 7706	DIODE NSDEMP11XV6T5
OR	407 227 3102	DIODE EMP11
D3113	407 228 0506	DIODE HN1D01FE
OR	407 232 7706	DIODE NSDEMP11XV6T5
OR	407 227 3102	DIODE EMP11
D3114	407 179 1805	DIODE DAP222
OR	407 228 0506	DIODE HN1D01FE
OR	407 232 7706	DIODE NSDEMP11XV6T5
OR	407 227 3102	DIODE EMP11
D9301	407 223 5506	DIODE MA2Z720
D9302	407 153 7205	DIODE MA142K
OR	407 220 7305	DIODE MA142K-G
OR	407 134 7200	DIODE MA141K
D9303	407 223 5506	DIODE MA2Z720
D9304	407 223 5506	DIODE MA2Z720
D9551	407 232 3609	DIODE SD833-04SC
	(CRYSTAL DEVICES)	
X1101	645 069 4967	OSC,CRYSTAL 48.00000MHZ
X3001	645 046 1415	OSC,CERAMIC 4.00MHZ
X3002	645 054 3791	OSC,CRYSTAL 32.768KHZ
	(INDUCTORS)	
L1001	645 079 1611	IMPEDANCE,33 OHM P
L1002	645 079 1611	IMPEDANCE,33 OHM P
L1003	645 060 2207	IMPEDANCE,220 OHM P
L1004	645 053 5475	IMPEDANCE,240 OHM P
L1005	645 059 8111	IMPEDANCE,1000 OHM P
L1006	645 059 8111	IMPEDANCE,1000 OHM P
L1007	645 020 1912	INDUCTOR,240 OHM
L1008	645 020 1912	INDUCTOR,240 OHM
L1009	645 079 1611	IMPEDANCE,33 OHM P
L1011	645 053 5437	IMPEDANCE,240 OHM P
L1012	645 084 0616	IMPEDANCE,470 OHM P
L1025	645 083 7029	IMPEDANCE,33 OHM P
L1070	645 059 8111	IMPEDANCE,1000 OHM P
L1080	645 059 8111	IMPEDANCE,1000 OHM P
L1302	645 078 8246	IMPEDANCE,65 OHM -
L1501	645 061 7393	INDUCTOR,10U M

LOCATION	PARTS NO.	DESCRIPTION
L9301	645 059 8210	IMPEDANCE,600 OHM P
L9551	645 071 9707	INDUCTOR,4.7U M
	(VARISTORS)	
VA101	408 050 0504	VARISTOR AVR-M1005C080MT
VA102	408 050 0504	VARISTOR AVR-M1005C080MT
VA103	408 050 0504	VARISTOR AVR-M1005C080MT
VA134	408 050 0504	VARISTOR AVR-M1005C080MT
VA181	408 050 0504	VARISTOR AVR-M1005C080MT
VA182	408 050 0504	VARISTOR AVR-M1005C080MT
VA185	408 050 0504	VARISTOR AVR-M1005C080MT
VA186	408 050 0504	VARISTOR AVR-M1005C080MT
VA301	408 050 0504	VARISTOR AVR-M1005C080MT
VA302	408 050 0504	VARISTOR AVR-M1005C080MT
VA303	408 050 0504	VARISTOR AVR-M1005C080MT
VA304	408 050 0504	VARISTOR AVR-M1005C080MT
VA306	408 050 0504	VARISTOR AVR-M1005C080MT
VA307	408 050 0504	VARISTOR AVR-M1005C080MT
VA311	408 050 0504	VARISTOR AVR-M1005C080MT
VA312	408 050 0504	VARISTOR AVR-M1005C080MT
VA313	408 050 0504	VARISTOR AVR-M1005C080MT
VA314	408 050 0504	VARISTOR AVR-M1005C080MT
VA931	408 050 0504	VARISTOR AVR-M1005C080MT
VA932	408 050 0504	VARISTOR AVR-M1005C080MT
	(CAPACITORS)	
CB181	403 392 5507	CERAMIC 1U K 6.3V
CB182	403 392 5507	CERAMIC 1U K 6.3V
CB183	403 392 5507	CERAMIC 1U K 6.3V
CB184	403 392 5507	CERAMIC 1U K 6.3V
CB185	403 404 3606	CERAMIC 2200P M 25V
CB186	403 404 3606	CERAMIC 2200P M 25V
C1003	403 373 5908	CERAMIC 1000P K 16V
C1004	403 382 3803	CERAMIC 0.01U K 10V
C1010	403 373 5908	CERAMIC 1000P K 16V
C1013	403 382 3902	CERAMIC 0.1U K 6.3V
C1014	403 373 5908	CERAMIC 1000P K 16V
C1015	403 382 3902	CERAMIC 0.1U K 6.3V
C1018	403 373 5908	CERAMIC 1000P K 16V
C1019	403 382 3803	CERAMIC 0.01U K 10V
C1021	403 382 3902	CERAMIC 0.1U K 6.3V
C1022	403 382 3803	CERAMIC 0.01U K 10V
C1023	403 382 3803	CERAMIC 0.01U K 10V
C1025	403 381 8106	CERAMIC 1U K 6.3V
C1026	403 381 8106	CERAMIC 1U K 6.3V
C1029	403 381 8106	CERAMIC 1U K 6.3V
C1030	403 382 3902	CERAMIC 0.1U K 6.3V
C1031	403 382 3902	CERAMIC 0.1U K 6.3V
C1032	403 382 3902	CERAMIC 0.1U K 6.3V
C1033	403 382 3902	CERAMIC 0.1U K 6.3V
C1035	403 157 7104	CERAMIC 2700P K 50V
C1036	403 344 0406	CERAMIC 0.033U K 10V
C1037	403 155 2200	CERAMIC 3300P K 50V
C1038	403 382 3803	CERAMIC 0.01U K 10V
C1039	403 373 5908	CERAMIC 1000P K 16V
C1042	403 306 6606	CERAMIC 560P K 50V
C1043	403 317 1706	CERAMIC 6800P K 25V
C1044	403 306 6606	CERAMIC 560P K 50V
C1045	403 317 1706	CERAMIC 6800P K 25V
C1046	403 373 5908	CERAMIC 1000P K 16V
C1047	403 382 3803	CERAMIC 0.01U K 10V
C1048	403 381 8106	CERAMIC 1U K 6.3V
C1049	403 373 5908	CERAMIC 1000P K 16V
C1050	403 382 3803	CERAMIC 0.01U K 10V
C1051	403 383 5202	CERAMIC 4.7U K 6.3V
C1052	403 380 0903	CERAMIC 33P J 25V
C1053	403 380 0903	CERAMIC 33P J 25V
C1054	403 383 5202	CERAMIC 4.7U K 6.3V
C1055	403 380 0903	CERAMIC 33P J 25V
C1056	403 380 0903	CERAMIC 33P J 25V
C1057	403 380 0903	CERAMIC 33P J 25V
C1058	403 380 0903	CERAMIC 33P J 25V
C1059	403 380 0903	CERAMIC 33P J 25V
C1060	403 382 3803	CERAMIC 0.01U K 10V
C1061	403 373 5908	CERAMIC 1000P K 16V
C1062	403 380 0903	CERAMIC 33P J 25V
C1066	403 373 5908	CERAMIC 1000P K 16V
C1068	403 382 3803	CERAMIC 0.01U K 10V
C1069	403 383 5202	CERAMIC 4.7U K 6.3V

LOCATION	PARTS NO.	DESCRIPTION
C1072	403 392 5002	CERAMIC 22U M 6.3V
C1073	403 381 8106	CERAMIC 1U K 6.3V
C1075	403 381 8106	CERAMIC 1U K 6.3V
C1076	403 381 8106	CERAMIC 1U K 6.3V
C1081	403 382 3902	CERAMIC 0.1U K 6.3V
C1082	403 383 5202	CERAMIC 4.7U K 6.3V
C1083	403 381 8106	CERAMIC 1U K 6.3V
C1084	403 381 8106	CERAMIC 1U K 6.3V
C1086	403 381 8106	CERAMIC 1U K 6.3V
C1091	403 382 3902	CERAMIC 0.1U K 6.3V
C1094	403 382 3902	CERAMIC 0.1U K 6.3V
C1101	403 382 3902	CERAMIC 0.1U K 6.3V
C1106	403 314 6407	CERAMIC 7P D 50V
C1108	403 314 6407	CERAMIC 7P D 50V
C1113	403 373 5908	CERAMIC 1000P K 16V
C1148	403 373 5908	CERAMIC 1000P K 16V
C1149	403 382 3803	CERAMIC 0.01U K 10V
C1150	403 382 3803	CERAMIC 0.01U K 10V
C1201	403 381 8106	CERAMIC 1U K 6.3V
C1202	403 381 8106	CERAMIC 1U K 6.3V
C1341	403 381 8106	CERAMIC 1U K 6.3V
C1401	403 382 3902	CERAMIC 0.1U K 6.3V
C1502	403 382 3902	CERAMIC 0.1U K 6.3V
C1504	403 381 8106	CERAMIC 1U K 6.3V
C1505	403 381 8106	CERAMIC 1U K 6.3V
C1506	403 382 3902	CERAMIC 0.1U K 6.3V
C1507	403 294 6107	CERAMIC 100P J 50V
C1508	403 294 6107	CERAMIC 100P J 50V
C1512	403 383 5202	CERAMIC 4.7U K 6.3V
C1513	403 377 8905	CERAMIC 2.2U K 6.3V
C1515	403 383 5202	CERAMIC 4.7U K 6.3V
C1516	403 392 5002	CERAMIC 22U M 6.3V
C1517	403 382 3902	CERAMIC 0.1U K 6.3V
C1518	403 382 3902	CERAMIC 0.1U K 6.3V
C1519	403 382 3902	CERAMIC 0.1U K 6.3V
C1520	403 384 4709	TA-SOLID 47U M 6.3V
C1521	403 397 0408	TA-SOLID 33U M 6.3V
C1522	403 397 0408	TA-SOLID 33U M 6.3V
C1523	403 397 0408	TA-SOLID 33U M 6.3V
C1524	403 381 8106	CERAMIC 1U K 6.3V
C1525	403 381 8106	CERAMIC 1U K 6.3V
C1825	403 383 5202	CERAMIC 4.7U K 6.3V
C1826	403 382 3902	CERAMIC 0.1U K 6.3V
C1827	403 382 3902	CERAMIC 0.1U K 6.3V
C1828	403 383 5202	CERAMIC 4.7U K 6.3V
C1829	403 381 8106	CERAMIC 1U K 6.3V
C1830	403 383 5202	CERAMIC 4.7U K 6.3V
C1831	403 382 3902	CERAMIC 0.1U K 6.3V
C1837	403 383 5202	CERAMIC 4.7U K 6.3V
C1841	403 381 8106	CERAMIC 1U K 6.3V
C1901	403 383 5202	CERAMIC 4.7U K 6.3V
C1902	403 383 5202	CERAMIC 4.7U K 6.3V
C2801	403 373 5908	CERAMIC 1000P K 16V
C3002	403 381 8106	CERAMIC 1U K 6.3V
C3003	403 382 3902	CERAMIC 0.1U K 6.3V
C3005	403 322 1005	CERAMIC 0.1U Z 16V
C3006	403 322 1005	CERAMIC 0.1U Z 16V
C3008	403 381 8106	CERAMIC 1U K 6.3V
C3010	403 397 0200	TA-SOLID 15U M 6.3V
C3011	403 382 3902	CERAMIC 0.1U K 6.3V
C3013	403 381 8106	CERAMIC 1U K 6.3V
C3014	403 317 2307	CERAMIC 20P J 50V
C3015	403 317 2307	CERAMIC 20P J 50V
C3016	403 381 8106	CERAMIC 1U K 6.3V
C3017	403 373 5908	CERAMIC 1000P K 16V
C3018	403 373 5908	CERAMIC 1000P K 16V
C9301	403 376 4403	CERAMIC 1U K 16V
C9302	403 281 5007	CERAMIC 0.033U K 25V
C9304	403 381 8106	CERAMIC 1U K 6.3V
C9305	403 329 6508	TA-SOLID 10U M 6.3V
C9306	403 381 8106	CERAMIC 1U K 6.3V
C9307	403 356 4706	CERAMIC 0.15U K 25V
C9308	403 381 8106	CERAMIC 1U K 6.3V
C9309	403 381 8106	CERAMIC 1U K 6.3V
C9310	403 373 5908	CERAMIC 1000P K 16V
C9311	403 383 5202	CERAMIC 4.7U K 6.3V
C9312	403 383 5202	CERAMIC 4.7U K 6.3V

LOCATION	PARTS NO.	DESCRIPTION
C9313	403 382 3902	CERAMIC 0.1U K 6.3V
C9314	403 382 3902	CERAMIC 0.1U K 6.3V
C9315	403 383 5202	CERAMIC 4.7U K 6.3V
C9316	403 382 3902	CERAMIC 0.1U K 6.3V
C9317	403 383 5202	CERAMIC 4.7U K 6.3V
C9318	403 373 5908	CERAMIC 1000P K 16V
C9319	403 381 8106	CERAMIC 1U K 6.3V
C9320	403 381 8106	CERAMIC 1U K 6.3V
C9321	403 356 4706	CERAMIC 0.15U K 25V
C9322	403 382 3902	CERAMIC 0.1U K 6.3V
C9323	403 383 5202	CERAMIC 4.7U K 6.3V
C9324	403 383 5202	CERAMIC 4.7U K 6.3V
C9325	403 382 3902	CERAMIC 0.1U K 6.3V
C9326	403 382 3902	CERAMIC 0.1U K 6.3V
C9327	403 382 3902	CERAMIC 0.1U K 6.3V
C9328	403 382 3902	CERAMIC 0.1U K 6.3V
C9329	403 383 5202	CERAMIC 4.7U K 6.3V
C9330	403 383 5202	CERAMIC 4.7U K 6.3V
C9331	403 382 3902	CERAMIC 0.1U K 6.3V
C9332	403 382 3902	CERAMIC 0.1U K 6.3V
C9333	403 382 3902	CERAMIC 0.1U K 6.3V
C9334	403 373 5908	CERAMIC 1000P K 16V
C9335	403 338 0306	CERAMIC 0.1U K 10V
C9336	403 323 6306	CERAMIC 0.1U K 16V
C9337	403 323 6306	CERAMIC 0.1U K 16V
C9338	403 338 0306	CERAMIC 0.1U K 10V
C9339	403 155 1807	CERAMIC 0.01U K 25V
C9340	403 338 0306	CERAMIC 0.1U K 10V
C9341	403 338 0306	CERAMIC 0.1U K 10V
C9526	403 338 0306	CERAMIC 0.1U K 10V
C9530	403 419 4001	CERAMIC 0.1U K 10V
C9534	403 356 6205	CERAMIC 2.2U K 10V
C9535	403 419 4001	CERAMIC 0.1U K 10V
C9536	403 392 5002	CERAMIC 22U M 6.3V
C9545	403 338 0306	CERAMIC 0.1U K 10V
C9558	403 276 1908	CERAMIC 22P J 50V
C9563	403 378 3602	POS-SOLID 33U M 10V
C9566	403 392 5002	CERAMIC 22U M 6.3V
C9567	403 338 0306	CERAMIC 0.1U K 10V
C9701	403 381 8106	CERAMIC 1U K 6.3V
C9711	403 322 1005	CERAMIC 0.1U Z 16V
C9712	403 294 6107	CERAMIC 100P J 50V
C9713	403 381 8106	CERAMIC 1U K 6.3V
C9714	403 381 8106	CERAMIC 1U K 6.3V
C9715	403 381 8106	CERAMIC 1U K 6.3V
C9716	403 338 0306	CERAMIC 0.1U K 10V
C9717	403 279 5002	CERAMIC 4700P K 25V
C9718	403 282 5105	CERAMIC 470P K 50V
C9719	403 276 1304	CERAMIC 1000P K 50V
C9720	403 338 0306	CERAMIC 0.1U K 10V
C9721	403 338 0306	CERAMIC 0.1U K 10V
C9722	403 381 8106	CERAMIC 1U K 6.3V
	(RESISTOR PACKS)	
RB104	645 028 0719	R-NETWORK 10KX4 1/32W
RB143	645 028 0719	R-NETWORK 10KX4 1/32W
RB180	645 064 1589	R-NETWORK 3.3KX2 1/16W
RB181	645 061 3722	R-NETWORK 47KX2 1/16W
RB182	645 064 1510	R-NETWORK 2.2KX2 1/16W
RB183	645 061 3630	R-NETWORK 0X2 1/16W
RB184	645 064 1510	R-NETWORK 2.2KX2 1/16W
RB185	645 061 3722	R-NETWORK 47KX2 1/16W
RB186	645 072 6811	R-NETWORK 3.3KX4 1/32W
RB187	645 061 3722	R-NETWORK 47KX2 1/16W
RB302	645 061 3678	R-NETWORK 100KX2 1/16W
RB303	645 028 0726	R-NETWORK 100KX4 1/32W
RB304	645 064 2357	R-NETWORK 150KX2 1/16W
RB305	645 032 8886	R-NETWORK 47KX4 1/32W
RB306	645 032 8886	R-NETWORK 47KX4 1/32W
RB307	645 032 8886	R-NETWORK 47KX4 1/32W
RB931	645 037 4371	R-NETWORK 220X4 1/32W
RB932	645 037 4371	R-NETWORK 220X4 1/32W
RB933	645 037 4371	R-NETWORK 220X4 1/32W
RB934	645 061 3685	R-NETWORK 220X2 1/16W
RB935	645 061 3685	R-NETWORK 220X2 1/16W
RB936	645 037 4371	R-NETWORK 220X4 1/32W
RB937	645 037 4371	R-NETWORK 220X4 1/32W
RB938	645 037 4371	R-NETWORK 220X4 1/32W

LOCATION	PARTS NO.	DESCRIPTION
	(RESISTORS)	
R1002	401 228 4502	MT-GLAZE 2.2 JA 1/16W
R1004	401 262 2304	MT-GLAZE 1.0K DC 1/16W
R1005	401 302 2004	MT-GLAZE 10K JA 1/20W
R1006	401 262 1802	MT-GLAZE 3.6K DC 1/16W
R1007	401 262 2304	MT-GLAZE 1.0K DC 1/16W
R1008	401 269 3908	MT-GLAZE 4.7K DC 1/16W
R1010	401 302 1304	MT-GLAZE 100 JA 1/20W
R1011	401 226 1503	MT-GLAZE 0.000 ZA 1/16W
R1012	401 260 5307	MT-GLAZE 6.2K JA 1/16W
R1013	401 260 5307	MT-GLAZE 6.2K JA 1/16W
R1014	401 302 2004	MT-GLAZE 10K JA 1/20W
R1015	401 302 2004	MT-GLAZE 10K JA 1/20W
R1017	401 224 9709	MT-GLAZE 22 JA 1/16W
R1018	401 290 2604	MT-GLAZE 11K DC 1/16W
R1019	401 262 5206	MT-GLAZE 1.5K DC 1/16W
R1020	401 302 1700	MT-GLAZE 1.5K JA 1/20W
R1021	401 301 1602	MT-GLAZE 39 DD 1/16W
R1022	401 301 1602	MT-GLAZE 39 DD 1/16W
R1023	401 326 5708	MT-GLAZE 30K JA 1/20W
R1024	401 224 9204	MT-GLAZE 15K JA 1/16W
R1025	401 306 7807	MT-GLAZE 10 JA 1/20W
R1030	401 302 2103	MT-GLAZE 1K JA 1/20W
R1031	401 307 1507	MT-GLAZE 33 JA 1/20W
R1032	401 302 2301	MT-GLAZE 47 JA 1/20W
R1035	401 302 2004	MT-GLAZE 10K JA 1/20W
R1036	401 302 2004	MT-GLAZE 10K JA 1/20W
R1039	401 225 8107	MT-GLAZE 10 JA 1/16W
R1040	401 307 1309	MT-GLAZE 4.7K JA 1/20W
R1041	401 224 9709	MT-GLAZE 22 JA 1/16W
R1042	401 224 9709	MT-GLAZE 22 JA 1/16W
R1043	401 302 1205	MT-GLAZE 0.000 ZA 1/20W
R1044	401 302 2004	MT-GLAZE 10K JA 1/20W
R1045	401 224 9709	MT-GLAZE 22 JA 1/16W
R1046	401 226 1503	MT-GLAZE 0.000 ZA 1/16W
R1047	401 224 9709	MT-GLAZE 22 JA 1/16W
R1048	401 308 3401	MT-GLAZE 220 JA 1/20W
R1049	401 308 3401	MT-GLAZE 220 JA 1/20W
R1050	401 308 3401	MT-GLAZE 220 JA 1/20W
R1051	401 228 4502	MT-GLAZE 2.2 JA 1/16W
R1052	401 226 1503	MT-GLAZE 0.000 ZA 1/16W
R1053	401 302 2004	MT-GLAZE 10K JA 1/20W
R1054	401 308 3401	MT-GLAZE 220 JA 1/20W
R1056	401 308 3401	MT-GLAZE 220 JA 1/20W
R1057	401 308 3401	MT-GLAZE 220 JA 1/20W
R1058	401 308 3401	MT-GLAZE 220 JA 1/20W
R1059	401 308 3401	MT-GLAZE 220 JA 1/20W
R1061	401 308 3401	MT-GLAZE 220 JA 1/20W
R1062	401 308 3401	MT-GLAZE 220 JA 1/20W
R1063	401 308 3401	MT-GLAZE 220 JA 1/20W
R1064	401 308 3401	MT-GLAZE 220 JA 1/20W
R1065	401 308 3401	MT-GLAZE 220 JA 1/20W
R1066	401 308 3401	MT-GLAZE 220 JA 1/20W
R1067	401 308 3401	MT-GLAZE 220 JA 1/20W
R1068	401 308 3401	MT-GLAZE 220 JA 1/20W
R1069	401 308 3401	MT-GLAZE 220 JA 1/20W
R1070	401 308 3401	MT-GLAZE 220 JA 1/20W
R1071	401 308 3401	MT-GLAZE 220 JA 1/20W
R1072	401 308 3401	MT-GLAZE 220 JA 1/20W
R1073	401 308 3401	MT-GLAZE 220 JA 1/20W
R1074	401 308 3401	MT-GLAZE 220 JA 1/20W
R1075	401 308 3401	MT-GLAZE 220 JA 1/20W
R1076	401 308 3401	MT-GLAZE 220 JA 1/20W
R1077	401 308 3401	MT-GLAZE 220 JA 1/20W
R1078	401 308 3401	MT-GLAZE 220 JA 1/20W
R1079	401 308 3401	MT-GLAZE 220 JA 1/20W
R1081	401 308 3401	MT-GLAZE 220 JA 1/20W
R1082	401 308 3401	MT-GLAZE 220 JA 1/20W
R1083	401 308 3401	MT-GLAZE 220 JA 1/20W
R1084	401 308 3401	MT-GLAZE 220 JA 1/20W
R1085	401 308 3401	MT-GLAZE 220 JA 1/20W
R1086	401 308 3401	MT-GLAZE 220 JA 1/20W
R1087	401 308 3401	MT-GLAZE 220 JA 1/20W
R1088	401 308 3401	MT-GLAZE 220 JA 1/20W
R1089	401 308 3401	MT-GLAZE 220 JA 1/20W
R1090	401 308 3401	MT-GLAZE 220 JA 1/20W
R1091	401 308 3401	MT-GLAZE 220 JA 1/20W

LOCATION	PARTS NO.	DESCRIPTION
R1092	401 307 1309	MT-GLAZE 4.7K JA 1/20W
R1093	401 307 1309	MT-GLAZE 4.7K JA 1/20W
R1094	401 307 1309	MT-GLAZE 4.7K JA 1/20W
R1102	401 224 9709	MT-GLAZE 22 JA 1/16W
R1109	401 225 1306	MT-GLAZE 470 JA 1/16W
R1111	401 224 9402	MT-GLAZE 1.0M JA 1/16W
R1130	401 275 2605	MT-GLAZE 560 DC 1/16W
R1131	401 275 1905	MT-GLAZE 2K DC 1/16W
R1132	401 317 9500	MT-GLAZE 1K DC 1/20W
R1133	401 321 2504	MT-GLAZE 5.1K DC 1/20W
R1134	401 317 8602	MT-GLAZE 1.5K DC 1/20W
R1135	401 262 5206	MT-GLAZE 1.5K DC 1/16W
R1136	401 315 9700	MT-GLAZE 680 JA 1/20W
R1137	401 321 1507	MT-GLAZE 8.2K DC 1/20W
R1138	401 317 8909	MT-GLAZE 2K DC 1/20W
R1139	401 310 6506	MT-GLAZE 560 JA 1/20W
R1157	401 306 7807	MT-GLAZE 10 JA 1/20W
R1175	401 224 9204	MT-GLAZE 15K JA 1/16W
R1176	401 224 9303	MT-GLAZE 1K JA 1/16W
R1201	401 306 7807	MT-GLAZE 10 JA 1/20W
R1432	401 302 2004	MT-GLAZE 10K JA 1/20W
R1435	401 302 2004	MT-GLAZE 10K JA 1/20W
R1437	401 302 2004	MT-GLAZE 10K JA 1/20W
R1501	401 307 1705	MT-GLAZE 22K JA 1/20W
R1502	401 262 2908	MT-GLAZE 220 DC 1/16W
R1503	401 285 1506	MT-GLAZE 270 DC 1/16W
R1504	401 302 1700	MT-GLAZE 1.5K JA 1/20W
R1505	401 302 1700	MT-GLAZE 1.5K JA 1/20W
R1506	401 321 1903	MT-GLAZE 75 DD 1/20W
R1507	401 317 7407	MT-GLAZE 68 DD 1/20W
R1508	401 317 8107	MT-GLAZE 100 DD 1/20W
R1509	401 317 8107	MT-GLAZE 100 DD 1/20W
R1510	401 321 1903	MT-GLAZE 75 DD 1/20W
R1511	401 317 8107	MT-GLAZE 100 DD 1/20W
R1512	401 321 1903	MT-GLAZE 75 DD 1/20W
R1513	401 321 1903	MT-GLAZE 75 DD 1/20W
R1514	401 321 1903	MT-GLAZE 75 DD 1/20W
R1515	401 302 2004	MT-GLAZE 10K JA 1/20W
R1516	401 262 0805	MT-GLAZE 18K DC 1/16W
R1517	401 258 6804	MT-GLAZE 15K DC 1/16W
R1518	401 302 2103	MT-GLAZE 1K JA 1/20W
R1519	401 307 1408	MT-GLAZE 180 JA 1/20W
R1520	401 302 2103	MT-GLAZE 1K JA 1/20W
R1522	401 310 6506	MT-GLAZE 560 JA 1/20W
R1523	401 225 8008	MT-GLAZE 330 JA 1/16W
R1524	401 302 1304	MT-GLAZE 100 JA 1/20W
R1836	401 306 7807	MT-GLAZE 10 JA 1/20W
R1837	401 226 1503	MT-GLAZE 0.000 ZA 1/16W
R1898	401 302 2004	MT-GLAZE 10K JA 1/20W
R3001	401 224 9303	MT-GLAZE 1K JA 1/16W
R3002	401 224 9303	MT-GLAZE 1K JA 1/16W
R3003	401 307 1101	MT-GLAZE 47K JA 1/20W
R3004	401 240 9509	MT-GLAZE 820 JA 1/16W
R3005	401 225 7902	MT-GLAZE 220 JA 1/16W
R3008	401 225 7902	MT-GLAZE 220 JA 1/16W
R3009	401 225 7902	MT-GLAZE 220 JA 1/16W
R3010	401 307 1606	MT-GLAZE 100K JA 1/20W
R3011	401 224 9006	MT-GLAZE 10K JA 1/16W
R3013	401 310 6407	MT-GLAZE 330K JA 1/20W
R3014	401 308 3401	MT-GLAZE 220 JA 1/20W
R3020	401 302 1304	MT-GLAZE 100 JA 1/20W
R3021	401 310 6407	MT-GLAZE 330K JA 1/20W
R3052	401 307 1101	MT-GLAZE 47K JA 1/20W
R3054	401 327 0900	MT-GLAZE 51K JA 1/20W
R3055	401 308 7607	MT-GLAZE 150K JA 1/20W
R3056	401 302 2103	MT-GLAZE 1K JA 1/20W
R3066	401 302 2103	MT-GLAZE 1K JA 1/20W
R3110	401 302 1304	MT-GLAZE 100 JA 1/20W
R3163	401 317 1207	MT-GLAZE 750 JA 1/20W
R3164	401 308 3401	MT-GLAZE 220 JA 1/20W
R9301	401 307 1606	MT-GLAZE 100K JA 1/20W
R9302	401 240 9509	MT-GLAZE 820 JA 1/16W
R9303	401 234 4800	MT-GLAZE 3.3 JA 1/16W
R9304	401 234 4800	MT-GLAZE 3.3 JA 1/16W
R9305	401 225 1108	MT-GLAZE 27 JA 1/16W
R9306	401 302 2301	MT-GLAZE 47 JA 1/20W
R9307	401 225 0200	MT-GLAZE 3.3K JA 1/16W
R9308	401 229 7205	MT-GLAZE 18K JA 1/16W
R9309	401 240 9004	MT-GLAZE 3.9 JA 1/16W
R9311	401 234 4800	MT-GLAZE 3.3 JA 1/16W
R9312	401 234 4800	MT-GLAZE 3.3 JA 1/16W
R9313	401 225 1108	MT-GLAZE 27 JA 1/16W
R9315	401 227 5609	MT-GLAZE 8.2K JA 1/16W
R9318	401 302 2301	MT-GLAZE 47 JA 1/20W
R9319	401 302 1205	MT-GLAZE 0.000 ZA 1/20W
R9321	401 226 1503	MT-GLAZE 0.000 ZA 1/16W
R9322	401 226 1503	MT-GLAZE 0.000 ZA 1/16W
R9323	401 226 1503	MT-GLAZE 0.000 ZA 1/16W
R9325	401 105 7909	MT-GLAZE 0.000 ZA 1/16W
R9327	401 226 1503	MT-GLAZE 0.000 ZA 1/16W
R9501	401 312 4203	MT-FILM 4.7 FD 1/6W
R9502	401 312 4203	MT-FILM 4.7 FD 1/6W
R9503	401 312 4203	MT-FILM 4.7 FD 1/6W
R9504	401 312 4203	MT-FILM 4.7 FD 1/6W
R9505	401 224 9709	MT-GLAZE 22 JA 1/16W
R9506	401 310 9309	MT-FILM 3.9 FA 1/4W
R9509	401 224 9709	MT-GLAZE 22 JA 1/16W
R9516	401 224 8801	MT-GLAZE 100 JA 1/16W
R9517	401 224 8801	MT-GLAZE 100 JA 1/16W
R9554	401 225 1405	MT-GLAZE 47K JA 1/16W
R9560	401 257 4108	MT-GLAZE 100K DC 1/16W
R9561	401 309 2601	MT-GLAZE 470K DC 1/16W
R9562	401 258 6903	MT-GLAZE 20K DC 1/16W
R9718	401 257 4108	MT-GLAZE 100K DC 1/16W
R9719	401 257 4108	MT-GLAZE 100K DC 1/16W
R9720	401 225 8107	MT-GLAZE 10 JA 1/16W
R9721	401 262 1901	MT-GLAZE 6.8K DC 1/16W
R9722	401 262 1604	MT-GLAZE 2.2K DC 1/16W
R9723	401 262 2304	MT-GLAZE 1.0K DC 1/16W
R9724	401 224 9501	MT-GLAZE 2.2K JA 1/16W
R9725	401 262 1000	MT-GLAZE 33K DC 1/16W
R9726	401 262 0805	MT-GLAZE 18K DC 1/16W
R9727	401 262 1000	MT-GLAZE 33K DC 1/16W
R9728	401 257 4108	MT-GLAZE 100K DC 1/16W
R9729	401 225 1405	MT-GLAZE 47K JA 1/16W
R9730	401 225 1405	MT-GLAZE 47K JA 1/16W
R9733	401 225 1405	MT-GLAZE 47K JA 1/16W
R9736	401 225 1405	MT-GLAZE 47K JA 1/16W
R9737	401 225 0507	MT-GLAZE 33K JA 1/16W
R9738	401 225 0507	MT-GLAZE 33K JA 1/16W
R9739	401 225 0606	MT-GLAZE 5.6K JA 1/16W
R9740	401 225 0606	MT-GLAZE 5.6K JA 1/16W
	(SWITCHES)	
S3101	645 045 2857	SWITCH,PUSH,
S3102	645 045 2857	SWITCH,PUSH,
S3103	645 045 2857	SWITCH,PUSH,
S3104	645 053 3822	SWITCH,DETECTOR 1P-1T,
	(CONNECTORS)	
CN103	645 072 1786	PLUG,PWB-PWB 60P (N.S.P)
CN105	645 067 6734	SOCKET,15P(SX613)(N.S.P)
CN106	645 074 6642	PLUG,PWB-WIRE 20P(N.S.P)
CN141	645 080 4403	SOCKET,CARD(SD) 1(N.S.P)
CN181	645 073 8999	SOCKET,FPC 8P (N.S.P)
CN182	645 075 2056	PLUG,PWB-WIRE 10P(N.S.P)
CN302	645 068 2285	SOCKET,FPC 19P (N.S.P)
CN931	645 060 4683	PLUG,PWB-PWB 34P (N.S.P)
CN951	645 069 2727	SOCKET,FPC 25P (N.S.P)
	(RECHRGEABLE BATTERY)	
Z3101 ⚠	645 051 6009	BATTERY,RECHARGE
	(MISCELLANEOUS)	
	636 090 8147	SPACER CONDENSER-SX812

COMPL PWB,CA-1 SV-SX812

636 091 0973

	(SEMICONDUCTORS)	
Q9001	405 212 7807	TR UP05C8G
Q9002	405 212 7807	TR UP05C8G
	(CAPACITORS)	
C9001	403 379 3007	CERAMIC 10U K 16V
C9002	403 323 6306	CERAMIC 0.1U K 16V
C9003	403 379 3007	CERAMIC 10U K 16V

LOCATION	PARTS NO.	DESCRIPTION
C9004	403 323 6306	CERAMIC 0.1U K 16V
C9005	403 376 4403	CERAMIC 1U K 16V
C9006	403 323 6306	CERAMIC 0.1U K 16V
C9007	403 379 3007	CERAMIC 10U K 16V
C9008	403 379 3007	CERAMIC 10U K 16V
C9009	403 338 0306	CERAMIC 0.1U K 10V
	(RESISTORS)	
R9001	401 302 2707	MT-GLAZE 47 DD 1/16W
R9002	401 262 2205	MT-GLAZE 820 DC 1/16W
R9003	401 263 1702	MT-GLAZE 1.2K DC 1/16W
R9004	401 302 2707	MT-GLAZE 47 DD 1/16W
R9005	401 262 2205	MT-GLAZE 820 DC 1/16W
R9006	401 263 1702	MT-GLAZE 1.2K DC 1/16W
R9007	401 224 8801	MT-GLAZE 100 JA 1/16W
R9008	401 224 8801	MT-GLAZE 100 JA 1/16W
	(CONNECTOR)	
CN901	645 060 4706	SOCKET,PWB-PWB 34(N.S.P)
	(MISCELLANEOUS)	
	409 670 1704	IC MN39727PMJ-A (N.S.P.)
	636 090 7997	MOUNTING,LENS SX812• (N.S.P.)

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636 089 3801

	(VARISTOR)	
VA521	408 050 1204	VARISTOR AVR-M1608C120MT
	(SEMICONDUCTORS)	
Q5001	405 182 9009	TR EMF18
Q5003	405 200 5501	TR QS5U21
Q5201	405 206 7707	TR SI3473DV-E3
Q5202	405 206 7707	TR SI3473DV-E3
Q5203	405 169 4508	TR DTC114EM
Q5409	406 020 3708	TR CY25CAH-8F-T13 F10V
	(INTEGRATED CIRCUITS)	
IC501	409 654 2406	IC MAX8613ETM+
IC503	409 648 3709	IC TK11100CSC-G
IC521	409 652 1906	IC LTC4061EDD-4.4PBF
IC541	410 544 4202	IC LT3468ES5PBF
IC542	409 623 9108	IC RD3CYD08CM
	(DIODES)	
D3120	645 079 5688	UNIT,REMOCON RECEIVER
D5001	407 238 1203	DIODE CUS01,Q
D5002	407 238 1203	DIODE CUS01,Q
D5003	407 238 1203	DIODE CUS01,Q
D5004	407 210 5403	DIODE RB551V-30
D5006	407 232 3609	DIODE SD833-04SC
D5202	407 210 1108	ZENER DIODE UDZS7.5B
D5401	407 223 5506	DIODE MA2Z720
D5402	407 237 8302	DIODE CRF02,Q
D5404	407 247 4004	DIODE RR255M-400
D5406	407 205 5203	DIODE RB521S-30
	(VARIABLE RESISTOR)	
VR501	645 079 1277	VR,SEMI,22K N
	(INDUCTORS)	
L5001	645 066 4687	IMPEDANCE,30 OHM P
L5004	645 061 7416	INDUCTOR,47U M
L5005	645 079 6616	INDUCTOR,1.2U N
L5006	645 072 3681	INDUCTOR,2.4U N
L5007	645 079 6616	INDUCTOR,1.2U N
L5008	645 067 2361	INDUCTOR,3.3U N
L5009	645 081 7410	INDUCTOR,2.0U N
L5011	645 072 3681	INDUCTOR,2.4U N
L5012	645 061 7416	INDUCTOR,47U M
L5013	645 081 7243	INDUCTOR,1.2U N
L5014	645 068 7136	INDUCTOR,4.7U N
L5015	645 065 9652	INDUCTOR,4.7U M
L5016	645 065 9652	INDUCTOR,4.7U M
	(TRANSFORMER)	
T5401	645 071 5549	TRANS,STEP UP
	(CAPACITORS)	
C5001	403 282 5105	CERAMIC 470P K 50V
C5002	403 392 5002	CERAMIC 22U M 6.3V
C5003	403 392 5002	CERAMIC 22U M 6.3V
C5004	403 383 5004	CERAMIC 1U K 16V
C5005	403 392 5002	CERAMIC 22U M 6.3V
C5006	403 392 5002	CERAMIC 22U M 6.3V

LOCATION	PARTS NO.	DESCRIPTION
C5007	403 420 7206	CERAMIC 10U K 10V
C5008	403 379 3007	CERAMIC 10U K 16V
C5009	403 371 8901	CERAMIC 10U M 6.3V
C5010	403 379 3007	CERAMIC 10U K 16V
C5011	403 379 3007	CERAMIC 10U K 16V
C5012	403 392 5002	CERAMIC 22U M 6.3V
C5013	403 380 6608	CERAMIC 0.22U K 6.3V
C5014	403 338 0306	CERAMIC 0.1U K 10V
C5015	403 276 1304	CERAMIC 1000P K 50V
C5016	403 392 5002	CERAMIC 22U M 6.3V
C5020	403 379 0808	CERAMIC 1U M 16V
C5025	403 392 5002	CERAMIC 22U M 6.3V
C5026	403 392 5002	CERAMIC 22U M 6.3V
C5027	403 381 8106	CERAMIC 1U K 6.3V
C5028	403 381 8106	CERAMIC 1U K 6.3V
C5029	403 381 8106	CERAMIC 1U K 6.3V
C5030	403 392 5002	CERAMIC 22U M 6.3V
C5031	403 420 7206	CERAMIC 10U K 10V
C5033	403 371 8901	CERAMIC 10U M 6.3V
C5034	403 277 1204	CERAMIC 220P K 50V
C5035	403 383 5004	CERAMIC 1U K 16V
C5036	403 379 3007	CERAMIC 10U K 16V
C5039	403 378 0601	CERAMIC 0.47U K 6.3V
C5041	403 381 8106	CERAMIC 1U K 6.3V
C5042	403 381 8106	CERAMIC 1U K 6.3V
C5043	403 381 8106	CERAMIC 1U K 6.3V
C5047	403 294 6107	CERAMIC 100P J 50V
C5201	403 372 7507	CERAMIC 2.2U K 6.3V
C5202	403 338 0306	CERAMIC 0.1U K 10V
C5401	403 381 1206	POS-SOLID 33U M 6.3V
C5402	403 383 5004	CERAMIC 1U K 16V
C5403	403 311 3409	CERAMIC 0.01U K 16V
C5405	403 276 1304	CERAMIC 1000P K 50V
C5410	403 428 3408	CERAMIC 0.018U K 350V
C5411	403 357 3302	CERAMIC 0.01U K 630V
C5412	404 106 7008	ELECT 95U A 300V
	(RESISTORS)	
R5001	401 257 4009	MT-GLAZE 68K DC 1/16W
R5002	401 257 4108	MT-GLAZE 100K DC 1/16W
R5003	401 226 1503	MT-GLAZE 0.000 ZA 1/16W
R5004	401 257 4108	MT-GLAZE 100K DC 1/16W
R5005	401 258 9102	MT-GLAZE 5.6K DC 1/16W
R5006	401 290 5605	MT-GLAZE 1.3K DC 1/16W
R5007	401 262 5602	MT-GLAZE 56K DC 1/16W
R5008	401 274 9704	MT-GLAZE 24K DC 1/16W
R5009	401 258 6804	MT-GLAZE 15K DC 1/16W
R5010	401 305 0908	MT-GLAZE 430K DC 1/16W
R5011	401 257 4009	MT-GLAZE 68K DC 1/16W
R5013	401 258 0406	MT-GLAZE 120K DC 1/16W
R5014	401 258 6705	MT-GLAZE 12K DC 1/16W
R5015	401 258 7009	MT-GLAZE 150K DC 1/16W
R5016	401 258 6804	MT-GLAZE 15K DC 1/16W
R5017	401 258 0406	MT-GLAZE 120K DC 1/16W
R5018	401 285 1506	MT-GLAZE 270 DC 1/16W
R5019	401 290 5605	MT-GLAZE 1.3K DC 1/16W
R5021	401 290 2703	MT-GLAZE 3K DC 1/16W
R5022	401 257 4108	MT-GLAZE 100K DC 1/16W
R5023	401 262 1000	MT-GLAZE 33K DC 1/16W
R5024	401 262 1604	MT-GLAZE 2.2K DC 1/16W
R5025	401 262 5602	MT-GLAZE 56K DC 1/16W
R5026	401 258 6903	MT-GLAZE 20K DC 1/16W
R5027	401 262 1406	MT-GLAZE 4.3K DC 1/16W
R5028	401 267 6604	MT-GLAZE 270K DC 1/16W
R5029	401 290 2604	MT-GLAZE 11K DC 1/16W
R5030	401 225 0606	MT-GLAZE 5.6K JA 1/16W
R5032	401 258 0406	MT-GLAZE 120K DC 1/16W
R5033	401 258 6804	MT-GLAZE 15K DC 1/16W
R5034	401 262 5206	MT-GLAZE 1.5K DC 1/16W
R5036	401 263 5809	MT-GLAZE 330K DC 1/16W
R5037	401 258 6804	MT-GLAZE 15K DC 1/16W
R5038	401 305 1004	MT-GLAZE 110 DC 1/16W
R5201	401 262 1703	MT-GLAZE 2.7K DC 1/16W
R5204	401 262 5206	MT-GLAZE 1.5K DC 1/16W
R5205	401 262 2304	MT-GLAZE 1.0K DC 1/16W
R5206	401 257 4108	MT-GLAZE 100K DC 1/16W
R5207	401 262 1703	MT-GLAZE 2.7K DC 1/16W
R5401	401 224 9303	MT-GLAZE 1K JA 1/16W

LOCATION	PARTS NO.	DESCRIPTION
R5402	401 258 6606	MT-GLAZE 10K DC 1/16W
R5403	401 262 2304	MT-GLAZE 1.0K DC 1/16W
R5405	401 224 9303	MT-GLAZE 1K JA 1/16W
R5406	401 224 9006	MT-GLAZE 10K JA 1/16W
R5421	402 079 0200	MT-GLAZE 220K JKG 1/8W
R5423	402 077 7409	MT-GLAZE 100K JKG 1/8W
R5424	401 224 9006	MT-GLAZE 10K JA 1/16W
	(FUSES)	
F5001	⚠ 423 031 5606	FUSE 32V 2A
F5002	⚠ 423 031 5606	FUSE 32V 2A
F5003	⚠ 423 031 5606	FUSE 32V 2A
F5004	⚠ 423 031 5606	FUSE 32V 2A
F5005	⚠ 423 031 5606	FUSE 32V 2A
F5006	⚠ 423 031 5606	FUSE 32V 2A
	(CONNECTORS)	
CN501	645 072 1823	TERMINAL,3P-SX719
CN502	645 072 1793	SOCKET,PWB-PWB 60(N.S.P)
CN503	645 075 3657	PLUG,PWB-WIRE 2P (N.S.P)
	(MISCELLANEOUS)	
	636 090 7973	SPACER TERMINAL-SX812/J
	636 090 8017	SPACER CON-SX812/J

COMPL PWB,TB-1

636 089 3825

	(RESISTORS)	
R3101	401 226 1503	MT-GLAZE 0.000 ZA 1/16W
R3102	401 226 1503	MT-GLAZE 0.000 ZA 1/16W
R3103	401 226 1503	MT-GLAZE 0.000 ZA 1/16W
	(SWITCH)	
S3103	645 053 3822	SWITCH,DETECTOR 1P-1T,
	(CONNECTOR)	
CN651	645 071 4375	SOCKET,FPC 6P (N.S.P)

COMPL PWB,TB-2

636 089 3832

	(SWITCH)	
S6501	645 051 5385	SWITCH,PUSH 1P-1TX1,
	(MISCELLANEOUS)	
	636 091 0485	ASSY,WIRE VF1&TB2-SX812

COMPL PWB,VF-1

636 089 3795

	(VARISTORS)	
VA171	408 050 1204	VARISTOR AVR-M1608C120MT
VA180	408 050 0504	VARISTOR AVR-M1005C080MT
	(SEMICONDUCTORS)	
Q1701	405 186 7308	TR UP04213 00
OR	405 181 1202	TR NSBC144EDXV6T5
OR	405 173 4006	TR PEMH2
OR	405 166 9506	TR EMH2
Q5101	405 212 7500	TR RTL030P02
Q5102	405 172 4700	TR UNR32A3
OR	405 168 3700	TR DTC144EM
	(INTEGRATED CIRCUITS)	
IC171	409 636 7702	IC LC15503-EV BGA (N.S.P.)
IC172	409 505 9400	IC TK11130CS
IC173	409 618 6600	IC TK11125CS-G
	(CAPACITORS)	
CB176	403 392 5507	CERAMIC 1U K 6.3V
CB177	403 392 5507	CERAMIC 1U K 6.3V
C1701	403 338 0306	CERAMIC 0.1U K 10V
C1702	403 420 7503	CERAMIC 4.7U K 16V
C1703	403 379 0808	CERAMIC 1U M 16V
C1704	403 379 0808	CERAMIC 1U M 16V
C1705	403 379 0808	CERAMIC 1U M 16V
C1706	403 379 0808	CERAMIC 1U M 16V
C1707	403 379 0808	CERAMIC 1U M 16V
C1708	403 379 0808	CERAMIC 1U M 16V
C1709	403 379 0808	CERAMIC 1U M 16V
C1710	403 379 0808	CERAMIC 1U M 16V
C1711	403 383 5202	CERAMIC 4.7U K 6.3V
C1713	403 378 0601	CERAMIC 0.47U K 6.3V
C1714	403 358 3202	CERAMIC 10U K 6.3V
C1717	403 338 0306	CERAMIC 0.1U K 10V
C1718	403 276 1007	CERAMIC 0.01U K 16V
C1719	403 381 8106	CERAMIC 1U K 6.3V
C1720	403 381 8106	CERAMIC 1U K 6.3V
C1721	403 346 9803	CERAMIC 0.047U K 10V
C1722	403 381 8106	CERAMIC 1U K 6.3V
C1728	403 329 6508	TA-SOLID 10U M 6.3V
C5134	403 379 0808	CERAMIC 1U M 16V
C5135	403 379 0808	CERAMIC 1U M 16V
C5136	403 298 9609	CERAMIC 0.1U K 16V
C5137	403 408 5507	CERAMIC 2.2U K 16V
	(RESISTORS)	
R1701	401 224 8900	MT-GLAZE 100K JA 1/16W
R1702	401 225 0606	MT-GLAZE 5.6K JA 1/16W
R1703	401 275 2605	MT-GLAZE 560 DC 1/16W
R1704	401 262 2304	MT-GLAZE 1.0K DC 1/16W
R1705	401 226 1503	MT-GLAZE 0.000 ZA 1/16W
R1706	401 226 1503	MT-GLAZE 0.000 ZA 1/16W
R1709	401 224 9006	MT-GLAZE 10K JA 1/16W
R1710	401 224 9006	MT-GLAZE 10K JA 1/16W
R1713	401 224 9907	MT-GLAZE 22K JA 1/16W
R1715	401 263 2303	MT-GLAZE 750 JA 1/16W
R1716	401 226 1503	MT-GLAZE 0.000 ZA 1/16W
R5101	401 262 4508	MT-FILM 30K DD 1/16W
R5102	401 261 8505	MT-FILM 47K DD 1/16W
R5103	401 224 9006	MT-GLAZE 10K JA 1/16W
R5104	401 225 1405	MT-GLAZE 47K JA 1/16W
R5105	401 224 9907	MT-GLAZE 22K JA 1/16W
	(CONNECTORS)	
CN171	645 070 3645	SOCKET,FPC 33P (N.S.P)
CN172	645 074 6697	PLUG,PWB-WIRE 2P (N.S.P)
CN173	645 075 2056	PLUG,PWB-WIRE 10P(N.S.P)
CN176	645 074 6642	PLUG,PWB-WIRE 20P(N.S.P)
CN178	645 074 6680	PLUG,PWB-WIRE 2P (N.S.P)
CN179	645 074 6680	PLUG,PWB-WIRE 2P (N.S.P)

COMPL PWB,ST-1

636 089 3818

	(TRANSFORMER)	
T5402	645 068 1721	TRANS,STEP UP

CIRCUIT DIAGRAMS & PRINTED WIRING BOARDS

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MAIN CIRCUIT C6
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CIRCUIT DIAGRAMS

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ST1 BOARD TRIGGER TRANS C8
CA1 BOARD CCD C9
CP1 BOARD (CAA) CAMERA C10
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PRINTED WIRING BOARDS (P.W.B.)

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CP1 P.W.B. (SIDE A & B) C19
PW1 P.W.B. (SIDE A & B) C20
TB1 P.W.B. (SIDE A & B) C20
TB2 P.W.B. (SIDE A & B) C20
ST1 P.W.B. (SIDE A & B) C20
VF1 P.W.B. (SIDE A & B) C20

NOTES:

1. **All resistance values in "OHMS" unless otherwise noted.**
   (K=1,000 ; M=1,000,000)
2. **All capacitance values in "μF" unless otherwise noted.**
   p=pico farad ; μ,u or U=micro farad
3. **All inductance values in "μH" unless otherwise noted.**
   μ,u or U=micro henry ; m=milli henry

Figure of printed wiring boards

Multilayer board:

"Side A" means the view from A side of the board.

"Side B" means the view from B side of the board.

Singlelayer board:

View from the copper-foil side of the board, otherwise noted.

PRODUCT SAFETY NOTICE

THE COMPONENTS DESIGNATED BY A SYMBOL (⚠) IN THIS SCHEMATIC DIAGRAM DESIGNATES COMPONENTS WHOSE VALUE ARE OF SPECIAL SIGNIFICANCE TO PRODUCT SAFETY. SHOULD ANY COMPONENT DESIGNATED BY A SYMBOL NEED TO BE REPLACED, USE ONLY THE PART DESIGNATED IN THE PARTS LIST.
DO NOT DEVIATE FROM THE RESISTANCE, WATTAGE AND VOLTAGE RATINGS SHOWN.

EXPLANATORY NOTES (EXAMPLES)

Resistor 10K:1/16J means 10kilo ohm ±5%, 1/16watt max.
1M:1/10K means 1mega ohm ±10%, 1/10watt max.
Capacitor 0.047:F means 0.047micro farad, Ftype.
Electrolytic capacitor
10:16 means 10micro farad, 16volt max.
Inductor 330:J means 330micro henry ±5%
470:K means 470micro henry ±10%
No description J or K means ±5%

The number of "H=##" written in slant character, shows the voltage.
The number of "H=##" written in upright character, shows the height of the parts.

PAL-F-EX